The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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Combined Punch and Shear.

We present in the accompanying engraving a powerful combined punch and shear, recently turned out by the well-known German firm, Messrs. Breuer, Schumacher & Co., of Kalk, near Cologne, and which was specially constructed to meet the requirements of shipbuilding yards, boiler shops and other establishments engaged in work of a similar nature. It consists of two heavy bed-plates rigidly connected by eight large bolts and hoops of iron, and each extremity is strengthened by ribs, as shown in the cut. A shear and punch are arranged at opposite sides, and, in addition, the space between the bed-plates contains a second shear, arranged for cutting angle iron. Power is obtained from a small independent engine fixed laterally on the frame of the punch and having a cylinder 10½ x 16 inches. The driving-shaft is supported by three bronze bearings. Power is transmitted to the punch and shears by an arrangement of gear wheels, one of which drives a longitudinal shaft carrying three eccentrics, which operate the shear and punch at opposite sides of the apparatus, and also the central shear already mentioned. Both shears and punch move in large, carefully-adjusted slides, and each is furnished with suitable disengagement gear readily operated by the attendant. As shown in our engraving, a wrought-iron column rises from each side of the foundation, and by means of suitably-placed transverse-rods, two cranes have been arranged which greatly facilitate the handling of the material to be operated upon. The jaws of the shear measure 28 inches in depth, and sheets having a thickness of somewhat over 1¼ inches may be readily cut. The punch is applicable to sheets of the same thickness, the holes punched are about 1½ inches in diameter, and the depth of throat amounts to some 26 inches. The central shear is arranged so as to cut angle iron with sides not exceeding 6 inches. The machine weighs about 17 tons, and seems to meet with great favor in a number of German establishments.

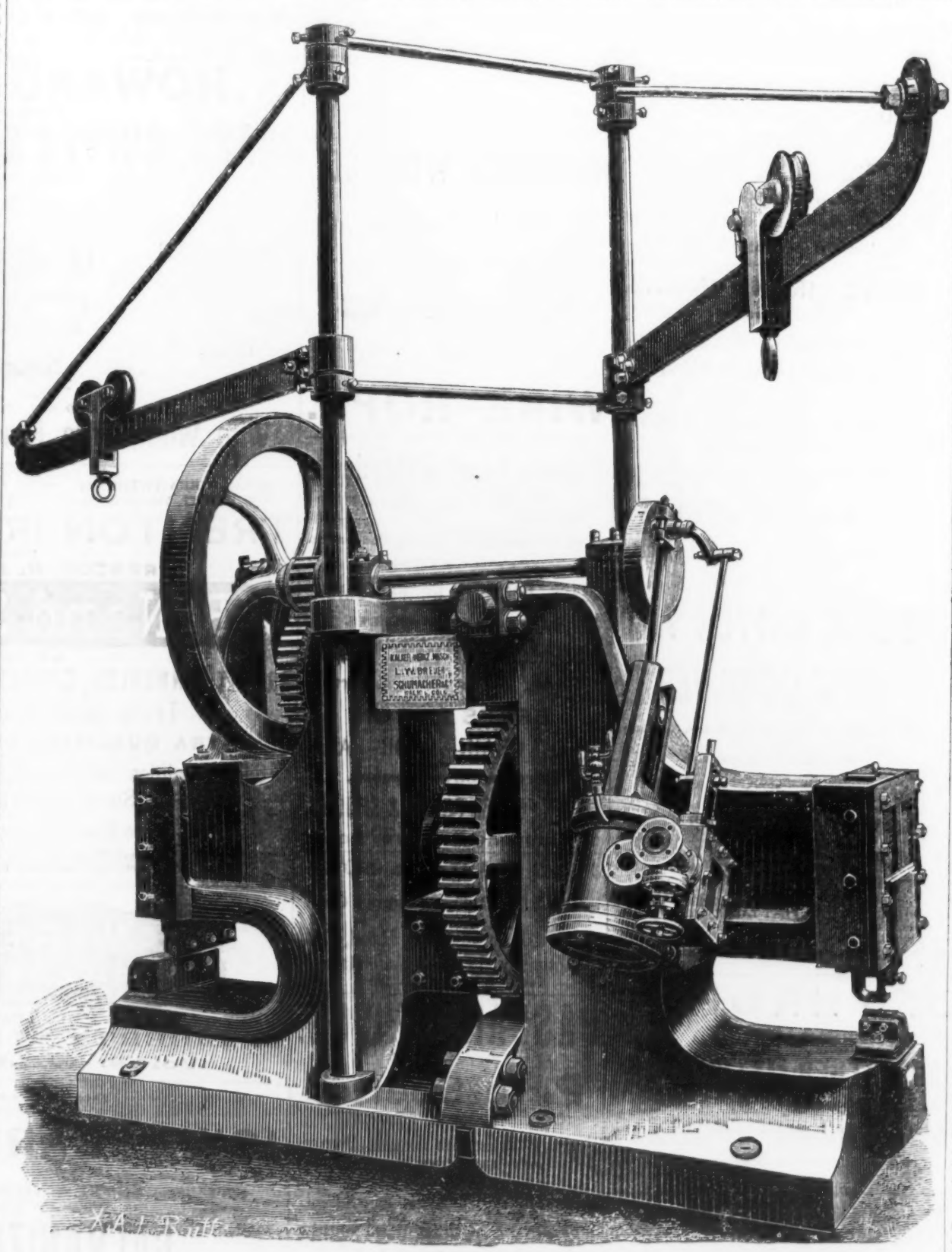
Decay of British Colonial Industries.

Speaking of the social and economic condition of many of Great Britain's West Indian Colonies, which cannot be regarded as by any means satisfactory, the *British Trade Journal* remarks:

It is not a little singular that this should be the case. The soil is highly fertile, its varied power of production is very great, and it is a cheap and easy thing to bring into the market whatever the Colonists may wish to sell. For all that, the exports of the West India Islands, excepting the Bermudas, which in 1831 were $9,932,500, had fallen in 1880 to $8,904,000. Making allowance for the difference in the value of money at these two dates, it will be seen that there has been a decline of about 10 per cent. since the abolition of slavery. In addition to this, the ownership of the soil has passed into fresh hands. Many of the descendants of the people who formed the land-owning class a hundred years ago have left the Colonies never to return. The freed Africans and their descendants, who form the bulk of the population, are in a state of extreme poverty. Immoral habits have reduced their physique and their capacity for work. The rate of increase among the natives is kept down by a very large proportion of deaths among infants and by other causes. Instead of being able to obtain cheap and abundant labor, the importation of East Indian coolies is constantly increased to prevent a collapse of industrial occupations. A garden of the earth, which ought to be a source of great wealth to those engaged in developing its resources, seems to be going from bad to worse, and, as the capacity of the natives for labor is constantly diminishing, and the supply of coolies cannot very well be kept up to a mark sufficient to counterbalance this deterioration, an industrial crisis will in all probability occur sooner or later.

One of the causes of these difficulties is the operation of the Encumbered Estates Court. For nearly 30 years it has been occupied in transferring the ownership of land to non-resident proprietors, whose principal object in life is to get as much as they can out of the soil in the smallest space of time. If the interests of capital and labor were in tolerable harmony, this process would in a measure benefit both the laborers and the land, but they are not. The planters who were the proprietors of the soil at the time of the emancipation found it impossible to treat people who had been been slaves on a footing of civil equality with themselves. In the Southern States of America, after the rebellion of 1861–65, the planters made the best of a sufficiently disagreeable situation. In the West Indies they pursued the opposite course, and treated the natives—an inappropriate word under the circumstances, but a convenient one for our purpose—with coldness and dislike. The money they received for their slaves was not spent on their land. The Africans, who were always anxious to have a hut and a piece of ground of their own, were prevented from achieving this humble ambition. Capital, combined with cheap free labor, might have done much for the Colonies, but the planters did not make use of their opportunities. The result has been that every succeeding year throws estates which planters cannot, or will not, properly work, more and more into the hands of non-resident proprietors. The rate of wages is so low that, except in two or three of the islands, the natives can barely keep themselves alive, for the greater portion of the public revenue is raised by taxes on the rice, fish and other articles of food upon which they subsist. This means, of course, that the chief incidence of taxation has been placed on the shoulders, not of the landed proprietors, but of the negro population, who are the least able to bear it, and who some fine day will probably resent it violently.

The public revenue of the West Indies in 1831 was £541,500. In 1880 it had increased 226 per cent. to £1,765,400, much of it being raised in the way we have described, for in the meantime the export trade had, as we have seen, declined. In Jamaica 30 per cent. of the revenue was raised on food imports. In the Leeward Islands the percentage was from 20 to 30 per cent., and these facts mean that the increased cost to the consumer is at least double the amount paid by the actual importer. Thus it comes to pass that the laborer cannot live decently on the average wages he is expected to be satisfied with, not altogether because the money will not in itself suffice, but because the direct taxes on food, and the indirect high prices resulting, consume half his wages. Being underfed, he cannot work well. It does not appear to be proved that under normal conditions the negro is incompetent. In Barbadoes, ever since the Emancipation, the relation between the land owners and their laborers has been satisfactory enough. Wages are low, but food is cheap, because taxation is not excessive. The planters are fairly prosperous, and the laboring population is tolerably comfortable. The unhappy preference given to the "consignee's heir" by the Encumbered Estates Court has never been applied in this island. The court might well be abolished altogether. The high import duties on food ought to be materially diminished, and then it might be possible in a very short time to abolish the artificial check to the increase of wages caused by the introduction of coolie labor under a Government guarantee. The immediate result of such changes would no doubt be disturbing, but the ultimate benefit to the islands would probably be very great.



COMBINED PUNCH AND SHEAR, BUILT BY MESSRS. BREUER, SCHUMACHER & CO., OF KALK, GERMANY.

The Polyphemus.

Many of our readers will probably remember that considerable difficulty was experienced a short time ago with the torpedo gear of the Polyphemus, of the British Navy. The London *Times*, however, in a recent issue, remarks that the ship is likely at the eleventh hour to prove a success. This was at one time considered very doubtful, and many breakdowns were recorded. She was brought round from Chatham at the beginning of the year, since which time she has been through constant experiments, with the object of rectifying admitted and notorious structural weaknesses in her under-water torpedo gear. Her preliminary trials at the Nore and her seaworthiness during the voyage to Portsmouth justified the Admiralty in incurring the additional expense of replacing her original locomotive boilers by a set of the ordinary marine type. But while her success as a ram, for which she was exclusively designed, was thus shown to be certain, great apprehensions existed with respect to her torpedo arrangements. The Polyphemus is intended to carry no guns, and hence, with impracticable torpedo apparatus, she would be dependent in action upon her ram alone.

The mechanism for ejecting the Whitehead does not greatly differ rom that adopted in several other British vessels, and its defective action may be therefore referred to the increased speed of the ram, 17 knots, and the increased immersion of the tubes. One of the tubes is placed in the ram itself, which is made hollow for the purpose, and two are fitted to act on the broadside. The first failed, from insufficient initial impulse to force the projectile into the water and away from the ship, while it was found impossible to project torpedoes from the broadside ports, except at very low speeds, in consequence of the tremendous pressure which the torpedo encountered from the water the moment it left the cover of the ship and the excessive vibration of the launching gear. The latter consists of a guide-bar, 25 feet long, upon which the torpedo runs, and a shield-bar to which it is attached by a T-piece, both of which are projected by means of compressed air from the ship's side at the same moment as the torpedo itself. When the speed of the ship attained about 10 knots, the projectile was often so tightly nipped by the pressure that it resolutely refused to move, and it was found impossible to move it without injury to the torpedo or danger to the ship. At other times it ran along the ways until, its head becoming free, the leverage exerted upon the tail before it could leave the guides was so great as to disable the propeller and wrench the T-piece from the shield. Repeated attempts were undertaken with a view to surmounting the difficulty, but without success, and at length the Admiralty, on the principle that a number of heads are better than one, appointed a special committee for the purpose of considering questions relating to the projection of Whitehead torpedoes from submerged tubes.

After repeated consultations, it was determined to supersede the shield-bar by an iron shield of sufficient vertical depth to protect the torpedo from the water pressure until it had got clear of the ship, and of sufficient strength to secure rigidity under strain. The shield was grooved on the inside to allow the T-piece to slide along in the same way as before. By this means the projectile was effectually protected until it had left the guides and its own engines had acquired enough force to carry it on its way. The port tube and its adjuncts were in the normal condition, but on the starboard side the launching gear was strutted to the side and fitted with pressure gauges made of copper and lead, for the purpose of measuring the lateral and vertical force of the vibrations set up by the way of the ship. The Polyphemus went out to Spithead lately for the first series of experiments, and a preliminary trial was made in still water to test the apparatus. She was afterward got under way, and when a speed of 14 and 16 knots had been attained, several runs were made from the broadside with excellent results. The projectiles left the ship very freely without sustaining the slightest injury, and with such good aim that they were sent under a boat, stationed about 400 yards off, at each discharge, while the vessel was passing through the water at a high rate of speed. On subsequent days spurts of speed equal to 17 and 17½ knots (the full estimated speed), were realized, when runs equally satisfactory were obtained. The results obtained show that the initial difficulty has been successfully overcome, and that the existing gear may be modified at comparatively small cost so as to be made thoroughly efficient. Preparations are being made to perfect the firing of the bow tube, after which the ship will receive a set of new boilers.

A Nail Mill Projected at Milwaukee.

The North Chicago Rolling Mill Company have decided to erect a nail mill in connection with their works at Bay View, a suburb of Milwaukee. We take the following particulars concerning the project from the Milwaukee *Sentinel* for September 15:

Bay View is again the recipient of great happiness, in which the whole of its people participate, and in which all the business men of Milwaukee are interested. The much-hoped-for nail mill is at last assured, and in the near future the many idle hands in the village will again be busily employed. Messrs. O. W. Potter, president; John C. Parkes, general manager, and Henry Criete, chief engineer, of Chicago, and Capt. S. Clement, treasurer; Francis Hinton, assistant treasurer, and Director S. P. Burt, of Milwaukee, with Supt. Wm. B. Parkes, all of the North Chicago Rolling Mill Company, went over the whole of the grounds yesterday afternoon, and the matter has now been definitely arranged. The new factory, which will contain the nail works, will be erected on the vacant lots on the east side of Superior street, between the company's barn and Russell avenue. The building will be a frame structure, 220 feet long and 100 feet wide, with stone foundation, and will contain 100 nail machines. These machines will be run by a new 250-horse-power engine, and will turn out a daily average of 800 kegs of nails. Three of the furnaces in the old rail mill will be arranged for heating the iron, which will be rolled into nail-plate in that mill and conveyed to the new factory by cars on a track to be laid out under the puddle-mill coal trestle. The transferring of the plate from the old rail mill to the nail mill will be an item of expense that would not have been necessary had the mill been built between the rail mill and top and bottom mill, but the risk of its destruction by fire in case of a conflagration in either of those mills was more than an offset to the advantage that might have been gained. The buildings and machinery necessary to the starting of the new work will cost in the neighborhood of $100,000.

The materials for the buildings have already been ordered, and the work of erecting them will be begun at once. It is expected that the first nails will be manufactured in the new mill by the 1st day of January 1884, and the work of putting up the buildings and constructing the machinery will be rushed, with that end in view. Nearly 600 men will be given employment in the various branches of the new works, many of whom will necessarily have to be skilled in the work of making nails, and will come from other manufacturing centers. The other works of the company will also, of necessity, be more steadily employed, to meet the requirements of the new mill. In the puddle mill, where now only six furnaces are running, and they idle much of the time, the full capacity of the mill will be required to keep up a sufficient supply of puddled bars for the use of the nail mill, and the blast furnace will thereby be affected by the greater consumption of pig iron by the puddle mill.

A new Turkish tariff, to be applied to all nations having commercial treaties with Turkey, instead of a special tariff for each country, is now being prepared. Its rates will vary in amounts equivalent to an ad valorem charge of from 8 to 20 per cent.

The Divining-Rod. *

BY ROSSITER W. RAYMOND.

(Continued from page 30, September 20.)

This review of the literature of the subject has brought us to the end of an important period, namely, that in which the physical effects of the rod were exclusively discussed, its earlier uses for general divination having gone out of fashion and recollection. Indeed, any attempt to maintain these would have incurred the censure of the church, which would have settled at once the vexed question of agency by denouncing this unauthorized intrusion upon its spiritual prerogative as diabolic. This is indeed what speedily happened, as we shall see. The lost doctrine of moral power reappeared, not among the learned, but out of the obscure mass of the people. In the Province of Dauphiny, in the south of France, the practice of the divining-rod, introduced perhaps by the Beausoleils, had become, 50 years after their death, an art followed by many experts, who were called *Hommes à Baguette*. They were employed to find springs of water, hidden treasure, mines, &c., and also to detect criminals, and even to settle disputes as to boundaries when the landmarks were gone. Two farmers, for instance, having a dispute as to the boundary between their farms, instead of going to a lawyer or judge, would send for a diviner. He, walking over the disputed ground, would indicate by the dipping of his rod the spot where the old landmark formerly stood, and this decision was accepted without appeal. Considering the expense of litigation in all times, and the peculiar character of the justice which at that time was sold so dear and worth so little, we may fairly say that, whatever be the merits of the divining-rod, the peasants of Dauphiny acted wisely in employing it.

In 1692 a mysterious murder was committed at Lyons. A wine merchant and his wife were found dead, lying in their cellar near the bloody ax with which they had been slain. A neighbor urged the authorities (who seem to have had no clew to the murderers) to employ a rich peasant of Dauphiny, already famous as an expert with the divining-rod. This man, Jacques Aymar by name, was sent for—or, rather, it was not necessary to send for him, since he proved to be already on hand in the city by the time it was decided to engage his services. This fact is significant, as giving the key to what turned out to be an extraordinary piece of clever detective work. A careful analysis of the numerous official and other records of this case shows it to be quite possible that the diviner had obtained important clues before he was publicly set to work. He first demanded to be taken to the scene of the crime that he might get his "impression." This consisted in a sort of shuddering, accompanied with signs of agitation, pain and exhaustion, and manifesting itself besides in the dipping of his rod. This took place at the spot where the bodies had lain, the spot where the ax was found, and also in the shop above, at various points which he declared to have been occupied or touched by the criminals. Having thus obtained a thorough impression, after the fashion of a bloodhound getting a scent, he started, though it was night, and followed with his rod the alleged course of the fugitives, passing without hesitation through many unlikely places, as far as one of the gates of the city. Next morning he resumed the trail and tracked it to the house of a gardener, where he declared that the criminals, either two or three in number, had stopped. The gardener and his wife denied all knowledge of them, and Aymar, consulting his rod, declared that neither had touched the murderer. But the rod dipped violently over two young children of the house, who thereupon confessed that three men had stopped there the day before, and had drunk wine at a table, which, by the way, had also been indicated by the rod. The children said they had kept this a secret because they feared being punished for leaving the door unlocked while their parents were away. After some further delays and preliminary tests, the magistrates determined to let Aymar pursue the murderers. He declared that they had taken a boat down the Rhone, and he followed them with an escort in the same manner, landing from time to time at different points where he said they had stopped. His pursuit was continued for a number of days with various interruptions, the assigned causes of which seem to have been sometimes but pretexts, and permit the suspicion that the intervals were employed by him in getting information in other ways. However this may be, he finally brought up at the prison of Beaucoire, and after applying his rod in succession to the inmates, pointed out as one of the Lyons murderers a hunchback, recently arrested for larceny. This man, being taken back to Lyons, was recognized at several points on the road as having passed just after the murder, and, finally, frightened by the accumulated evidence against him, made a full confession, and was susequently broken alive. The other two murderers Aymar professed to follow to the sea, and at sea along the coast, and until, as he alleged, they escaped from the kingdom.

So long as there was no doubt of Aymar's sincerity, this discovery of the criminal by the aid of the divining-rod seemed indeed marvelous. But it is not more wonderful than many detective operations in which the rod has played no part, and it is easy to trace the possible or probable methods which he employed. If, for instance, during the period just preceding his engagement by the magistrates, he had, in coming to town from his residence, 14 leagues distant, or in hanging about the town, where everybody was talking of the crime, picked up in any way the circumstances of the three fugitives entering the house where the children were, it is almost inevitable that he would have obtained also some general description of their appearance, and I need scarcely remark that the subsequent tracking of a hunchback would be no difficult matter. It should be added here that the judges who sentenced the hunchback explicitly declared that they attached no weight to the indications of the rod as direct evidence of his guilt, but condemned him wholly upon his own confession, confirmed by abundant circumstantial evidence.

But this achievement of the rod, attested as it was by the public confession and execution of the criminal, made a great sensation in France, and Aymar was called to Paris, where both the court and savans interested themselves greatly in his mysterious powers. Many marvelous feats are reported of him there; but the shrewd and rigorous experiments of the Prince de Condé exposed the emptiness of his pretentions. It was Aymar's claim that his rod was sensitive to the particular object which he was at the time seeking. When he sought a given murderer the track of some other murderer would not divert it. When he was pursuing a criminal he could not be led astray by subterranean water or treasure. If he felt these things in passing, his feeling was nevertheless distinguishable from that connected with his intention, &c. He could, at will, seek any given object, and when doing so could not be deceived. Unfortunately for this claim, the tests of the Prince deceived him very often. For instance, a purse of money was shown him, and after he had got his "impression" of it, it was taken out to be buried in the garden, but, instead of burying it, the person who had it kept it in his pocket. Aymar proceeded to the garden, and, undisturbed by the immediate neighborhood of the money in the pocket of a bystander, located a spot where he said it was buried. In another case he detected the gold of the gilding of a chair which was covered so as to permit a glimpse of its ornaments, but he sat on a similar chair, and walked through a saloon containing many of them, all completely covered, without discovering any gold. In another case a window was designedly broken in a palace. Aymar was sent for to trace the thief, who, he was informed, had recently stolen some money from the palace. His rod promptly indicated the broken window as the road by which the thief had entered, and he proceeded to trace also the route of flight, although no such theft had ever occurred. But so long as these and similar failures were not made generally public, Aymar continued to enjoy much celebrity, and no doubt it was enough to turn the head of a peasant to be the object of such attention. Growing more audacious, he undertook to reveal character, and on one occasion, having received a fee from a gentleman of the court, with the request that he would discover whether the gentleman's sweetheart was true to him, he sent for the lady's servant, and demanded of him another fee as a condition of certifying her virtue. Scandals of this kind became so bad that the Prince de Condé publicly exposed Aymar, and he returned to his home. On the way, however, in passing through a village he took occasion to designate five or six of the most respectable houses as the abodes of wicked women, which made a great uproar. I wish I could say that nothing more was afterward heard of of him; but, unfortunately, it appears that as late as 1703 this man was employed during the civil war to point out with his divining-rod Protestants for massacre, under the plea of punishment for crimes they had committed.

We find connected with the exploits of Jacques Aymar a new theoretical explanation of the divining-rod. Many persons of more or less scientific training, not doubting the honesty of the man and the genuineness of the sensations which he manifested, cross-questioned him on the subject, and thus accumulated a mass of supposed data for the formulation of the natural law underlying these phenomena. It was at this time that the Cartesian philosophy was dominant in France, and the "subtle matter," "corpuscles," "animal spirits" and "vortices" of Descartes furnished convenient hypotheses to explain almost anything. The two doctors of Lyons first supplied such hypotheses to the case of Aymar, but the subject was treated at still greater length by the Abbé de Vallemont, in his treatise on the divining-rod entitled "Physique Occulte," and published in 1693. In this work he declares that by insensible transpiration particles escape continually from our bodies; that such particles pursue a vertical direction, and strike the divining-rod, which is thus caused to move up and down, assuming a line parallel to the path of the corpuscles. The holder of the rod receives corpuscular effluvia from other human bodies and various substances, and communicates them through his pores to the rod, thus producing also a movement of revolution. The difference of the skin in different people results in various degrees of susceptibility to particular impressions, but Aymar was, according to the abbé, possessed of an epidermis which could receive all kinds of impressions without confounding them. The abbé says that there is a difference of form among the corpuscular effluvia of springs, minerals, bodies of thieves, those of assassins, those of naughty women, those of landmarks, &c.; in other words, he recognizes the existence of aqueous matter, larcenous matter, murderous matter, &c., and the last-named variety was the only one which produced upon Aymar very painful impressions. This was due, according to his scientific expounder, to the vehemence of remorse which pervades the corpuscles of an assassin. The fact asserted by Aymar that he had detected and followed the trail of a murderer 25 years after the murder, and the fact that in almost every instance he necessarily began his researches a day or two after the crime—to say nothing of the cases in which he determined the locality of the landmarks which had been missing for an immemorial period—forced the abbé to a wild hypothesis of the extraordinary levity of the corpuscules, by virtue of which they remained a long time suspended in the air in spite of rain, wind, and even other corpuscules of later origin.

Father Lebrun, in a pamphlet on "The Illusions of Philosophers Concerning the Divining-Rod," printed in Paris in 1693, seriously refuted the system of Vallemont. This pamphlet was republished in the third volume of Lebrun's "Critical History of Superstitious Practices" (Paris, 1702).

But Father Lebrun and a large proportion of those who took part in the discussion rejected the scientific theory altogether, and attributed the facts to Satan. It was asserted that not only might wicked people obtain the divining power by a league with the devil.

* Read at the Boston meeting of the American Institute of Mining Engineers, February, 1883.

but that such an alliance might be made unconsciously, and that the power might be conferred upon an unwilling subject, as a means of ruin to his soul. Several cases are described at length in which persons in whose hands the divining-rod pointed out springs, &c., had been by prayer and fasting and the help of their spiritual advisers delivered from this dangerous gift. The authorities of the church favored this view, at least so far as any moral uses of the divining rod were concerned. In 1701 the Inquisition of Rome condemned the divining-rod and all writings in support of it.

I condense from M. Chevreul's book the following list of the principal authors on the subject for the period now under consideration.

Dr. Chauvin, of Lyons (a letter to the Marquise de Senozan, dated September 22, 1692, published in the brochure, "Superstitions Anciennes et Modernes," Amsterdam, 1733; also in an appendix to the 2d edition of Lebrun's "Histoire Critique des Pratiques Superstitieuses).

Dr. Pierre Garnier, of Lyons (a letter to M. de Sève, published November 10, 1692, at Lyons). This, like the letter of Dr. Chauvin, advanced the corpuscular hypothesis.

Two anonymous letters concerning the divining-rod, published in *Le Mercure* of January and February, 1693. The first combats the corpuscular hypothesis; the second argues that, although this explanation is to be rejected, there is, nevertheless, nothing supernatural, magical or diabolic about the phenomena, and that they are probably to be referred to physical causes as yet unknown.

M. de Couriers, a blind man and thorough partisan of the divining-rod (a letter in *Le Mercure* of March, 1694).

M. L. de Vallemont, priest and doctor of theology ("Physique Occulte, ou Traité de la Baguette Divinatoire et de son Utilité pour la Découverte des Sources d'Eau, des Minières, des Trésors Cachés, des Voleurs et des Meurtriers Fugitifs," Paris, 1693, 12mo., 608 pp.). The argument of this book has been summarized above. Its purpose was to diminish the category of "occult" things by showing that the phenomena of the rod, like those of magnetism and electricity, were explicable by the physical corpuscular hypothesis.

Two letters published in the *Mercure* for April, 1693, by order of the Prince de Condé. One is anonymous; the other is addressed by M. Robert, *procurer du roi*, to Father de Chevigny. These are the documents which record the failures of Aymar, and the second concludes as follows: "His Serene Highness desires the assurance to be given to undeceive the public, that the rod of J. Aymar is nothing but an illusion and a chimerical invention. These are the Prince's words."

Father Lebrun ("Lettres qui Découvrent l'Illusion des Philosophes sur la Baguettes, et qui Détruisent leurs Systèmes," Paris, 1693; also "Historie Critique des Pratiques Superstitieuses qui ont Soduit les Peuples et Embarrassé les Savants," Rouen and Paris, 1702). These publications have been alluded to above. The letters comprise an interesting correspondence among Father Lebrun and three of the foremost savans of France, Father Malebranche, the Abbé de Rancé (the celebrated Abbé de la Trappe,) and the Abbé Pirot, chancellor of the University of Paris. Lebrun (writing before the Lyons murders) narrates the alleged powers and performances of the diviners of Dauphiny, and asks Malebranche what he thinks of the matter. The latter, reasoning acutely on the data offered, decides that, as to physical objects (*e. g.*, springs), if the action of the rod is real, water on the surface must agitate it more powerfully than water underground; also that it cannot be possible by any natural law to distinguish between the action of a small spring near the surface and a larger spring lying deeper. As to moral effects (discovery of murderers, missing landmarks, &c.), he concludes that if the rod really does this without fraud, it can only be from a supernatural cause (presumably demoniac), and that the use of the rod is therefore to be condemned. Lebrun rejoins, agreeing with this view as to the moral effects, but suggesting the corpuscular hypothesis as to material objects. A second letter of Malebranche declines to yield this point, and positively ascribes the whole thing to the devil. Meanwhile, the Abbé de la Trappe consulted by Malebranche, and (like the latter) assuming for the sake of the argument, but not accepting fully the reality of the phenomena, says the discovery of murderers, &c., must be ascribed to Satan, but the physical effects may be the result of a physical cause. Nevertheless, the use of the divining-rod should be discouraged altogether on religious grounds. Chancellor Pirot takes the same position, saying that the curés should forbid this practice as unlawful.

In his "Histoire Critique," Father Lebrun gives a large number of instances in which the divining-rod has failed. He cites the Provost of the Isle of France, who testified that he had often employed experts with the rod, both to detect criminals and to discover springs, and had never found one in whose hands the instrument was not "often variable and very often false." He shows the fundamental contradiction between two schools of practitioners, one of which declared that touching the rod with the same substance as the hidden substance which was causing it to move would stop the motion, while the other declared that this proceeding augmented the motion. The conclusion of the argument is that the phenomena of the rod (which Father Lebrun appears to believe are sometimes free from conscious imposture) are due to an intelligent cause of some kind, and that this cause must be satanic.

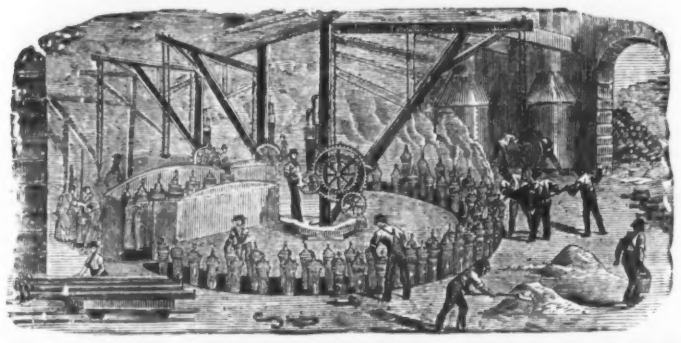
Father Ménestrier ("Indications de la Baguette pour Découvrir les Sources d'Eau, les Métaux Cachés, les Vols, les Bornes Déplacées, les Assassinats," &c., published at the end of the author's "Philosophie des Images Enigmatiques," Lyons, 1694). This author takes the same view as the preceeding.

M. Baritel ("La Verge de Jacob, ou L'art de Trouver des Trésors," 1693). The translation of this book by Thomas Welton has been already mentioned. The author appears to hold the corpuscular theory of the Abbé Vallemont, with the addition (which I do not find in any of the views of Vallemont's book), that he ascribes the capacity of different men in the use of the rod to the

A. H. McNEAL,

BURLINGTON, N. J.

FLANGE PIPES.



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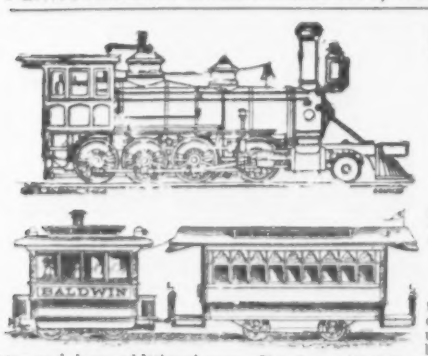

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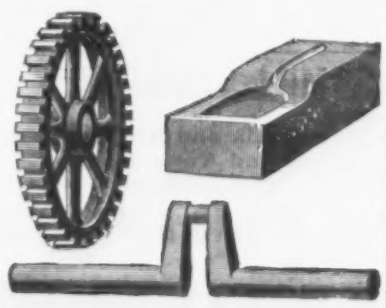

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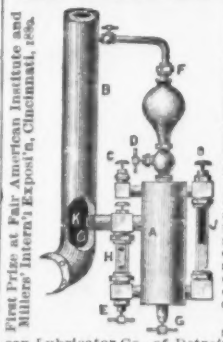

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effect of the planets under which they were born, and defines this effect to consist in opening the pores of some more than others, and filling some more than others with "active particles," which, being crowded out through the aforesaid open pores by the intrusion of exterior particles (from springs, metals, murderers, stolen goods, boundary lines, &c.), powerfully affect the rod. Whoever has from his favorable stars both particles and pores galore, can discover with the rod anything he reasonably seeks. But he who has "only plentitude of particles with closed pores," will be sensitive to certain things only, to wit, such as move him most strongly, because the particles emanating from them violently eject his interior particles in spite of his less abundantly perforated epidermis.

The condemnation expressed by so many ecclesiastical authorities and by the Inquisition (October 26, 1701) undoubtedly checked the use of the divining-rod for moral purposes. At least we hear little of such applications in the eighteenth century. But believers in the rod were still numerous, and practitioners abounded, particularly in Dauphiny. The discoveries of Galvani put into the hands of the crude science of the day the materials for a new hypothesis, which was applied to the so-called hydroscopes or water-diviners. One of the most celebrated of these, Bartholemy Bleton, was born in Dauphiny in 1750, and in 1780 was called to Lorraine by Dr. Thouvenel, who wished to study a good specimen of this art. The Doctor, like his predecessors a hundred years before, tried credulous experiments and asked questions in abundance, and obtained a mass of supposed facts, out of which he immediately made a book, published in 1781, and called "Mémoire Physique et Medicinal, Montrant des Raports Evidents entre les Phénomènes de la Baguette Divinatoire du Magnetisme et de l'Ectricité." It would be useless to give the voluminous details of his investigation. The following points are, however, especially noteworthy: In the first place, Bleton apparently did not profess to discover immaterial qualities or facts, but chiefly confined himself to the detection of running water. In the second place, he frankly avowed that the rod possessed no power in itself by virtue of its form or material, and that it was merely an index, outwardly exhibiting to the spectators his inward feeling. This feeling the Doctor declared to be a tremor, attacking first the diaphragm and communicating itself through the body and hands to the rod. In the third place this tremor was found by Dr. Thouvenel to be weakened, though not destroyed, when Bleton was on a tree or ladder or another person's shoulder, instead of the ground, or when he touched electrified substances; but the tremor and also the movement of the rod were completely stopped when Bleton was insulated from the ground. Upon facts of this kind he based his electrical theory. I remark, by the way, that the observations and the theory of Mr. Latimer, in his recent work on the divining-rod, already mentioned, recall in a striking manner the performances of Bleton and the theory of Thouvenel. Mr. Latimer claims to have made the new discovery that the effect of the divining-rod is destroyed by insulating the practitioner, as, for instance, by placing him upon a platform supported by glass bottles. If he had known how thoroughly this claim had been examined and refuted almost exactly 100 years ago he would have had less faith in its novelty and value.

Thouvenel's book made no little sensation, and in 1782 Bleton was called to Paris, where a remarkable series of experimental tests were applied to him. A newspaper report of the day declares that in the presence of many thousands of spectators he followed a subterranean aqueduct in the garden of the Luxembourg for 15,000 yards without a mistake. The chief engineer of the water-works is reported to have said that the trace was so accurate that, if the maps of his office had been lost, Bleton's footsteps would have constituted a complete survey to replace them. It is just possible that the *Journal de Paris* was tempted to make a sensation of this case, and it is also quite possible that a keen observer might notice indications, other than those of his own diaphragm, by which he could follow the line of buried pipes. A large number of experiments, more calmly reported, certainly do not sustain the enthusiasm of this account. It was found, for instance, that Bleton often passed over running water, when blindfold, without noticing it; and that when taken several times over the same course he would not point out accurately each time the spots which he had previously marked. For example, of 16 points once indicated, he recognized with the rod on the second round but eight and missed the other eight. A single point to which he was repeatedly brought blindfold, he indicated three times and missed three times. Of seven channels of running water which he was made to cross repeatedly, he indicated one once in four times, another once in four times, and another once in three times, while still another, which he crossed in two spots, affected his diaphragm at one crossing, and not at all at the other. The insulation experiment was repeated by a physician at Paris. At a point where Bleton's rod was powerfully affected by alleged subterranean water, he was mounted upon a stool with glass legs, and immediately the rod ceased to be affected. When the stool was removed, however, and he stood upon the ground, the rod resumed its sensitiveness. But Dr. Charles, who conducted this experiment, took occasion, while Bleton stood upon the stool, to bring the top, without his knowledge, into electrical communication with the earth by means of a good conductor, thus destroying the insulation completely, though the hydroscopist supposed it still to exist. Under these circumstances the rod remained inactive, and the destruction of insulation did not produce the slightest result. This was declared at the time to be a proof of Bleton's charlatanry; but, as we shall see hereafter, it is equally consistent with the hypothesis of unconscious mental and muscular action.

As a final test of Bleton's capacity as a hydroscopist, he was taken blindfold into the new church of Saint Genevieve, where there was known to be no water for 100 feet below the floor, the vaults, foundations, &c., actually extending all that distance below. Here he professed to discover at numerous points large and small streams of water. Thouvenal subsequently asserted that his *protegé* had been affected by currents of damp air circulating in the cellar, but this explanation was universally considered as a desperate attempt to maintain a theory already brought into discredit by experimental tests. Bleton, however, though he ceased to be seriously respected by impartial scientists, continued to receive much attention and to do a thriving business, both in Paris and, subsequently, in the Provinces. Here, however, he no longer worked blindfold or professed to see with his diaphragm. He proceeded, like the ordinary water-diviners, with open eyes, studying all the natural indications, and coming to his decisions with abundant leisure, and under these circumstances it is beyond doubt that he rendered many valuable services to landed proprietors, by successfully locating wells. In many cases, however, he failed entirely, and it is reported that even in those in which he succeeded, he was seldom right as to the depth at which water would be found or the quantity which would be obtained. It should be mentioned that in Dauphiny, where Bleton discovered a large number of springs, he was regarded with an esteem never given to Aymar and some other famous hydroscopists. In other words, the people who knew most about the art of discovering water pronounced Bleton to be a real expert, while they believed Aymar and Parangue (of whom a word presently) to be more or less charlatans. A review of all the facts leaves little doubt that in Bleton's case there was an unusually large proportion of the skill of the prospector, combined with rather less than usual of the mysterious claims of the wizard.

Concerning Jean Jacques Parangue, mentioned above, it will be sufficient to say that he was born in 1760, near Marseilles, was said to have been peculiarly sensitive as a child to the presence of subterranean waters, and became famous as a hydroscopist; but he used no rod at all, and the scientific theory advanced by his friends was one of clairvoyance. His eyes were described as very peculiar, and it was asserted that he saw water through rocks, earth or masonry, but, strangely enough, not through wood, crystal or glass. Like Bleton, he often deceived himself as to the volume and depths of the springs he discovered.

Dr. Thouvenel never saw Parangue, but defended him against the incredulity of the the physicists, and undertook to show that the phenomena of clairvoyance even was merely a case under his electrical theory. According to his explanation, the delicate nerves of the eyes were affected by the electrical currents traversing the body, and therefore the clairvoyant really experienced the sensation of vision by an internal, not an external, excitation. Those who have read the admirable treatise of the late Dr. Clarke upon pseudopia will notice with interest that in this case Dr. Thouvenel, explaining imaginary facts by an untenable hypothesis, nevertheless came very near a true physical theory of visions.

The worthy Doctor emigrated at the time of the French Revolution, and carried with him to Italy another Dauphinese hydroscope named Pennet, whom he exhibited from city to city in support of his electrical theory. Pennet professed to find with his rod not only water, but buried metals and coal. I will not go at any length into the experiments. Some of them were striking and successful, and impressed even such savans as Spallanzani, more or less predisposed to expect discoveries in the new domain of animal magnetism. In many other cases, however, the experiments failed. For instance, in a trial of three days, at Padua, before a commission of savans, Pennet promenaded for two hours on the first day in a garden in which had been buried, at different points, four metallic masses and 1000 pounds of coal. He could not find the metals at all, and only after much difficulty indicated the coal. On the second day his ill success was equally marked. Finally, on the third day, of three metallic dsposits he failed to find the first, came pretty near the second without exactly hitting it, and found the third. The area covered by the search was only 840 square feet. Upon this test, Spallanzani revoked his favorable opinion. But at Florence, as reported by M. Bilot ("Mélanges Scientifiques et Litteraires," 1857, t. ii., p. 80), though I do not know on what authority, Pennet was so completely disgraced as to render worthless all evidence furnished by his career. A walled inclosure was prepared for experiment. It contained 90 small divisions, in five of which metals had been hidden. Dr. Thouvenel, having discovered that wet weather hindered success, the experiment was delayed until after eight dry, fine days, and it was then fixed for the following day. During the night which intervened, Pennet climbed by means of a ladder into the inclosure. A suspicious person who was watching the ground removed the ladder, and whatever the divining-rod could show, it was unable to show the prisoner the way out. This adventure, being made public, destroyed the credit of Pennet at Florence. Dr. Thouvenel could not deny the fatal fact, but, with true loyalty of science, declared that Pennet's moral defects had nothing to do with his physical faculty. It is only fair to add that no such passage as this is cited from Dr. Thouvenel's works.

(To be continued.)

Lake Superior Iron Ore Shipments.—The total ore shipments for the season up to and including Wednesday of last week, from the entire iron-ore producing regions of the Upper Peninsula of Michigan, were 1,521,997 gross tons, against 2,078,226 gross tons at the corresponding period last year—a difference of 556,229 tons. The Menominee County mines have the advantage over those of Marquette in point of holding their own, being credited with 720,601 tons—a falling off from last season of but 54,020 tons. Marquette County has sent out this season 801,136 tons—a drop down of 502,405 tons. The Chapin takes the lead, with credit for 187,731 tons. The Lake Superior Company have sent out 143,878 tons. The year thus far has been in favor of hematite ores, and thus it is that the Menominee County mines have been worked more energetically than those

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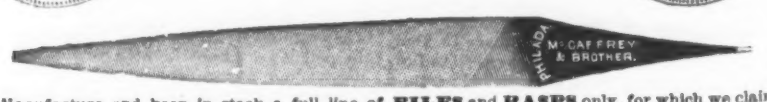

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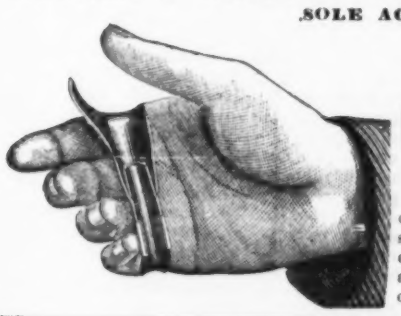

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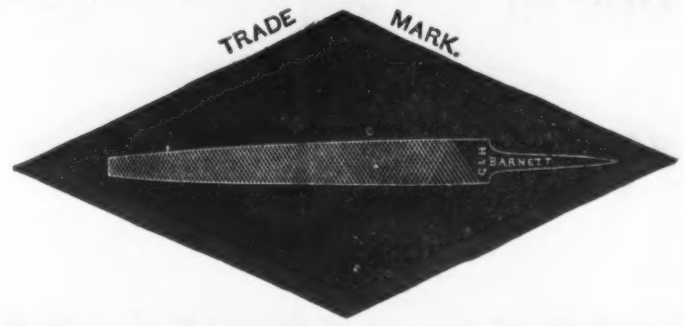

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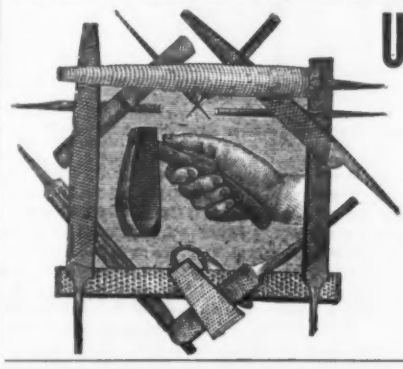

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THRIFT FILE WORKS,

Manufacturers of all kinds of

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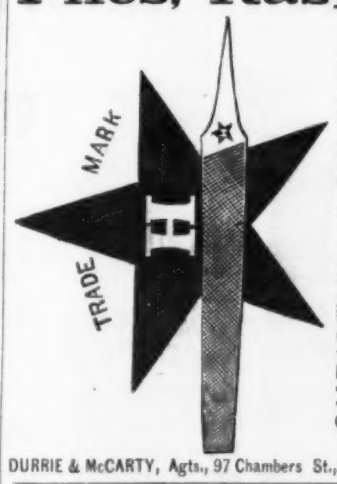

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HAND-CUT **FILES** Established 1858

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The Patent Combined

Dinner Pail and Lantern.

The most perfect Dinner Pail in the world. Hot coffee for dinner and a Lantern at night.

Manufactured by JOS. HAIGHT, PORT CHESTER, N. Y.

Sent by express on receipt of $1.00. Agents wanted.

STOVE REPAIRS.

Repairs for Stoves made at Troy, Albany, Rochester, Cleveland, Buffalo, Boston, St. Louis, Quincy, Chicago, Milwaukee and elsewhere, at

W. C. METZNER,

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Manufacturers of the

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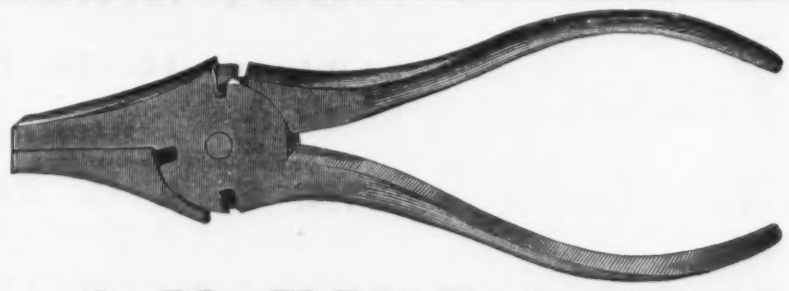
Made of the best American Steel, and warranted to be unequaled in the market. For sale by Iron and Hardware dealers throughout the United States and Canada.



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WATERFORD, N. Y.,

Manufacturers of the BUTTONS PATENT

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Specially Adapted for Use on Wire Fence.

Also Manufacturers of

Blacksmith and Machinists' Stocks and Dies, Plug and Taper Taps, Hand, Nut and Screw Taps, Pipe Taps and Reamers.

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For Coaches, Phaetons, Buggies, Wagons, &c.

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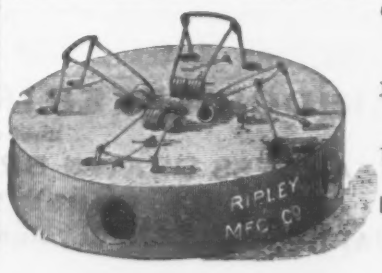

"COMMON SENSE" MOUSE TRAP.

BEST IN MARKET.

For Home & Export Trade.

RIPLEY MFG. CO.,

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Manufacturers of

Porcelain-Lined Lemon Squeezers, Mallets, Rosewood Faucets, Patent Boot Jacks and Hardware. Fine Wood Turning a Specialty

of Marquette County. Had the market warranted, the latter district could have increased its shipments of 1882 by many thousand tons. The Lake Superior alone could have crowded 400,000 tons, having the ore and means to raise it, but not the market.

International Patent Experiences.

Very few people, says the *Railway Review*, even those who are apparently well versed in patent practice, are aware of the many serious troubles and disastrous consequences arising from the making of a home patent dependent upon the life of a prior foreign application, or of the doubtful chances of foreign patents when dependent upon their issue in this country. Inasmuch as master mechanics and the officers of the mechanical sections of railroads are among those most likely to make valuable inventions which are of international use, and which should be secured thorough and valid international protection, we outline the present status of such protection, which we think will be of interest to our readers. In the United States a patent is granted for the full term of 17 years, but, with the invention patented abroad, this term will expire by limitation with the expiration of the corresponding foreign patent, and not only does it go to this extreme, but it expires with that of the shortest limitation. There is no country in which a patent, if at all valuable, can be disposed of to better advantage than in our own, but the patent must be protected, if foreign applications are made, from being short-lived in consequence of neglect or ignorance on the part of the inventor or attorney making the several international applications.

If we cite the countries and their respective patent privileges, this trouble will be made clear to the reader. As already mentioned, the United States patent expires at the end of 17 years. Section 4887 of the patent laws, says: "No person shall be debarred from receiving a patent for his invention or discovery, nor shall any patent be declared invalid by reason of its having been first patented or caused to be patented in a foreign country, unless the same has been introduced into public use in the United States for more than two years prior to the application. But every patent granted for an invention which has been previously patented in a foreign country shall be so limited as to expire at the same time with the foreign patent, or, if there be more than one, at the same time with the one having the shortest term, and in no case shall it be in force more than 17 years." The inventor must also be satisfied that the subject patented has not been patented or described in any printed publication, in this or any foreign country, before his invention or discovery took place.

In England the greatest life of a patent, except it be prolonged by a special decree of the Judicial Committee of the Privy Council, is 14 years. This prolongation is occasionally granted where patents are shown to be of extra great utility and it is decided that the inventor has not been sufficiently compensated. This gives the inventor generally a new ownership for a new half term of seven years, though in extreme cases the time is occasionally extended to an additional 14 years. The rule also prevails in England, and similarly in this country, that if the invention be clearly described in any printed book or specification in any public library within the United Kingdom before the date of application, the patent is void after proof. Also an English patent expires with any foreign patent of prior date for the same invention.

As a result of the English publication rule, it will be apparent to any inventor or applicant for an English patent that the arrival of the Official Gazette of the United States Patent Office containing the allowance, number and claims to a patent in England at once kills all chances for obtaining said patent in the United Kingdom (or England, Scotland, Ireland and all the adjacent islands), and at once permits the use of such invention without let or hindrance. The publication rule holds good throughout Europe except Turkey and Greece. In these two countries there is no rule at all concerning this particular feature. In France, printed publication of patent in any country, or its public use in France prior to the application, makes void any patent after proof. In Belgium the rule is still more stringent, the prior patenting or publishing in any country making a patent void on proof. Germany limits the application to a precedence of not having been worked in Germany or published in any printed book or paper before date of application for patent. The Austrian rule is about the same as that of France. In Italy, prior publication or working invalidates a patent

In Spain, covering Cuba, Porto Rico and the Philippine Islands, a prior publication or foreign patent of less than two years' date antecedent limits the length of a patent to 10 years' duration. In Russia, prior publication or working invalidates a patent. In Portugal, if the invention be worked or published in that country, before application, the patent is void. Thus it is seen that the mere application or use of an invention in any one country, whether it be important or not, either limits the life of a patent or debars the inventor from such advantage and privilege in another.

Now, to examine into the chances of a patent, it may be assumed that an inventor is about to make application for patents in this country, where the term is limited (neither shorter nor longer) to 17 years; in England, where the term is 14 years; in Germany, with 15 years, and in Belgium, with 20 years. The first duty of the applicant is to file his application for a patent in this country. Here it undergoes official investigation to determine its scope and keep it within reach of the present state of the art. The length of time between date of application and date of allowance cannot be determined, since certain lines of invention are more crowded and uncertain than others. With the application granted, however, the holder of the grant is entitled to a delay of six months from the date of allowance to the date of issue of the patent, of course risking the possibility of being anticipated in any foreign country. In the meantime he prepares the necessary applications for the other countries, ships them and has them ready for use in all the countries mentioned. On the day and date of the issue of the United States patents, these applications should be filed at the patent offices of the several countries named, except Germany; this he may have file done day ahead, so as reliably anticipate any possible chance of prior publication, and to save as much as possible of the time allowed for the patent to run in each of the several countries. By this means, under ordinary experiences, all the applications will bear even date, and will not be anticipated by a patent in any foreign country. In only two countries, France and Belgium, it is necessary to be more particular than to strike an even date. In these countries the applications bear a stamped record of the exact moment of the filing of the same, and this record must anticipate the time of publication of the patent in the United States.

If, however, some mistake be made in the filing of the application, it is easily seen that trouble and loss will result. Thus, if the application for patent in France be deposited too late (and not even a day is necessary), the publication and issuing of the United States patent prior to said application make its allowance void on proof. Or, again, to reverse the order, if the patent in France anticipates the publication and issue of the patent in the United States, then is the life of the American patent shortened to the 15-year standard of French practice. So, also, if either the French, English, German or Belgian applications be filed, and a patent is issued holding an earlier date than the United States patent, then, if the regulation fees or taxes are not paid in either of these countries, the patent becomes void in the United States, as also is the case in France and England if a patent becomes void in Germany or Belgium. In Germany and Belgium this rule does not hold, those patents not being dependent upon the life of patents in any other country.

To come nearer home, in Canada the life of a patent depends upon the amount of money paid at the time of application, the limits being 5, 10 and 15 years. The fees for additional periods of time may be paid up to the whole legal life of the patent, but if the original application be made only for the 5 or 10 years, whether the patent be extended by paying the fees or not, the United States patent expires with the original limit of the Canadian application or other foreign patent whose rules have a similar condition of advance payments. So it has been held by the United States courts that, although the foreign patent of prior issue is kept in force by paying extension fees, still this is not recognized as affecting the original standing of the patent in the United States, and that the United States patent lapses with the expiration of the original limit to the foreign lifetime of the same invention.

Could there be any more tiresome or troublesome plan laid out, even if the original intention had been to make things as complicated as possible? Unless there be some direct international understanding and protection guaranteed by all countries throughout the world upon which may be based an interference with individual ownership, we can see no reason whatever why the property of a citizen in one country should be dependent upon his ability to financially protect it in another, and that one a foreign country, especially if the invention is not previously known in such foreign country. It is a curious feature, and one of the freaks of fortune, that a foreign inventor who has, without a patent, developed to a successful issue an invention in a foreign country, but has never even made application for a patent in this country, may, after such foreign development, come to the United States (his invention being unknown and unpublished in this country, and this is a likely case), apply for and obtain a patent for the full 17 years, while, had he taken the usual course and patented it in said foreign country, his United Satates patent would only have been good during the lifetime accorded to said foreign patent.

If all this red-tape use of foreign privileges and regulations is intended to protect our citizens independent of inventors, and relieve them from paying royalties that cannot be exacted in a foreign country, then an allowance of such patents should be conditioned upon the inventor's ability to obtain the same in the foreign countries, and having them all expire at one and the same time, especially when, for instance, all chance of an English patent is void on the mere avowal of the United States Official *Patent Gazette Office* in England. The life of a patent in this country should be that for which the fee is paid and the law allows, regardless of circumstances which may affect it in any foreign country. Our taxes are not determined by those of other countries, and why should the value of our patents be at all affected by the private regulations of other countries?

Considering the injury done to patents in this country (especially when the United States' 17 years is longer than the limit allowed in any other country except Belgium, or, possibly, Spain), it is about time this troublesome feature, in our own patent laws at least, was done away with, and a patent allowed to remain valid, entirely independent of its development in a foreign country. Or else let such international protection be provided that the obtaining of a patent in one country and the filing of a copy of such patent in another may be a guarantee of protection to an inventor, just so long as such patents can be sustained in the courts as not legally interfering with the inventions of any one else. A fixed international lifetime should be accorded such patents for all countries and under all circumstances. The freedom and protection of the world to an inventor for some fixed time should be sufficient, and under no circumstances should such time be extended. If sufficient and ample compensation cannot be derived by an inventor from a patent of 17 years' duration and the support of every country, then the wrong should fall upon the owner of the patent for neglect or incompetency rather than on the public at large.

The production of anthracite coal in Pennsylvania in August was 3,324,711 gross tons, against 2,894,702 tons in August of last year.

Cutlery.

INFRINGEMENT OF JOHN WILSON'S TRADE MARK, MASSACHUSETTS, U.S.A.

JOHN WILSON'S
BUTCHERS' KNIVES,
BUTCHERS' STEELS,
and
SHOE KNIVES.

TRADE MARK

REGISTERED IN ENGLAND, WASHINGTON, U.S.A., AUSTRALIAN & OTHER BRITISH COLONIES, & GERMANY.

ACKNOWLEDGMENT AND AGREEMENT.

"WHEREAS, I, GEORGE A. ROBINSON, of West Mansfield, County of Bristol, State of Massachusetts, have heretofore manufactured and sold certain Knives bearing a Mark which is claimed to be an imitation of the trade-mark owned by John Wilson, of Sheffield, England, which consists of four peppercorns and a diamond, under the mistaken belief that I had the right to do so.

NOW, This, is to Witness, that, in consideration of the forbearance of the Representatives of the said John Wilson to sue me for damages for the wrong aforesaid, I do hereby undertake and agree,

FIRST, to surrender and deliver to the Attorneys for the said John Wilson, all knives now on hand, and in my possession, or under my control, bearing the said imitation trade-mark, and

SECOND, I further undertake and agree to and with the said John Wilson, and his legal representatives, not to manufacture or sell, or cause to be manufactured or sold, at any time in the future, Knives or other Cutlery, bearing his trade-mark aforesaid or any imitation or simulation thereof. IN WITNESS WHEREOF, I have hereunto set my hand and seal at West Mansfield, aforesaid, this thirty-first day of May, 1883.

WITNESS:—
E. M. REED."
(Attorney for Defendant.)

G. A. ROBINSON. L.S.

Imitation ☆0 J.WILSON SHEARSTEEL Mark.

WORKS:—SYCAMORE ST., SHEFFIELD, ENGLAND. Established 1750.

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Manufacturer of Razor Strops & Dressing Cases.
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Send for Price Lists.

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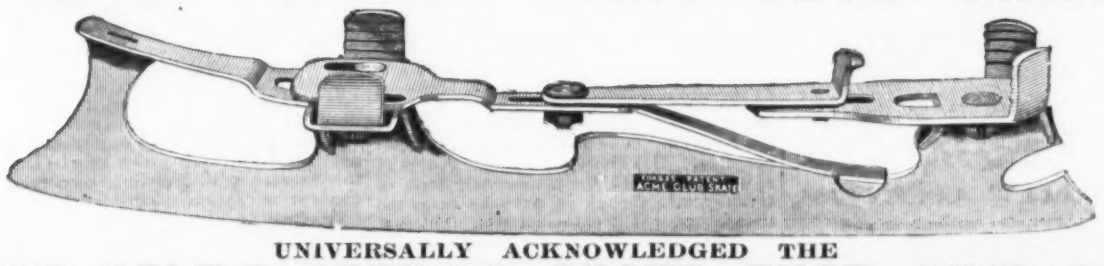
GENERAL HARDWARE.

FORBES' PATENT ACME CLUB SKATE.



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BEST SELF-FASTENING SKATE EVER INVENTED.

Retains the First Place and Foremost Rank for Demonstrated Superiority.

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SUCCESSORS TO

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Manufacturers of and Wholesale Dealers in
Cotton and "Long Flax" Sail Duck,
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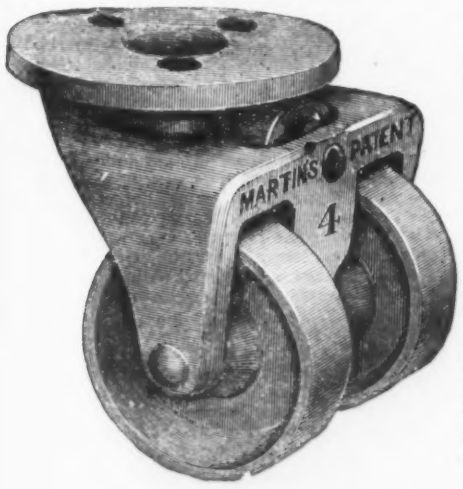
ONEIDA ALARM TILL.
SUSCEPTIBLE OF OVER 100 CHANGES.
Better than any other Till in the market. No tampering with keys, as it alarms every time a key is touched, unless acquainted with combination. Send for prices and compare this Till with others in the market. No Till-tapping possible.
MANUFACTURED BY
THE ONEIDA ALARM TILL CO.,
EAST SYRACUSE, N. Y.



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MARTIN'S CASTER,

For heavy bedsteads, book-cases, flower stands, refrigerators, safes, sideboards, desks, or very heavy furniture. Also for heavy ice chests, magazine boxes, stove trucks, heavy showcases, beer boxes, or any very heavy weight. Especially adapted for use in beer bottling, fruit canning, tobacco or warehouse establishments, where heavily-loaded tables need to be moved.

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Our Drawer is so uniform, simple, strong and effective, that it has nearly driven all competition from the field.

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F. & W. CLATWORTHY, Agents,

The demand for **Joseph Rodgers' & Sons'** productions having considerably increased, they have, in order to meet it, greatly extended their Manufacturing Premises and Steam-power.

To distinguish Articles of **Joseph Rodgers & Sons'** Manufacture, please to see that they bear their Corporate Mark.

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SUCCESSORS TO
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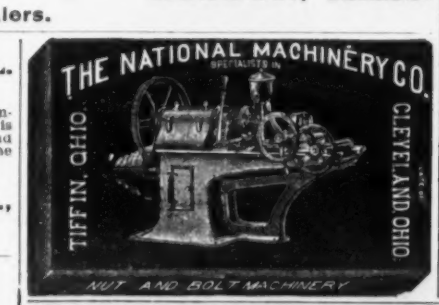
MANUFACTURERS OF
TABLE CUTLERY,
Cor. Nassau & Sheffield Sts., NEWARK, N. J.



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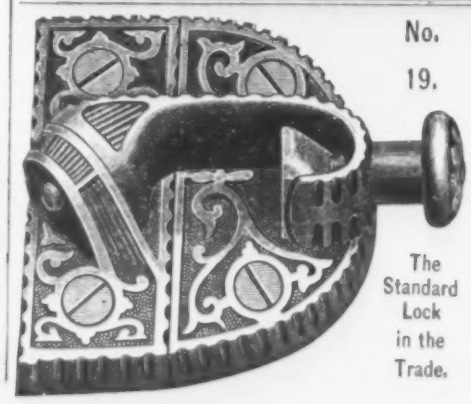

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The Standard Lock in the Trade.

PAYSON'S PERFECT
Burglar-Proof
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LIFTS THE WINDOW
(in locking) evenly to its place.
SIMPLE AND STRONG.

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THREE PRIZE MEDALS.

PARIS, 1855. PARIS, 1878.

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MANUFACTURERS OF
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Table Knives, Razors, Shovels, &c., &c., of every description.

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Patented Articles of Malleable Iron.

Hammer's Malleable Iron Oilers.
Three Sizes. *Nos. 1, 2 & 3.*

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Hammer's Adjustable Clamps.
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NEW pattern Heavy Screw Clamps; strongest in the market.
For sale by all the principal Hardware Dealers.
Send for Price List.

Malleable Iron Castings
of superior quality, and Hardware Specialties in Malleable Iron made to order.

HAMMER & CO.,
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FLORENCE TACK CO.,
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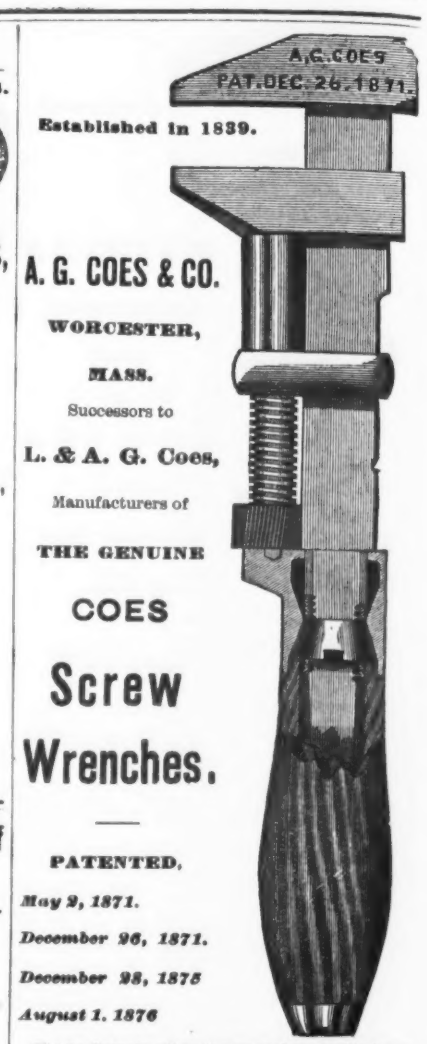
MANUFACTURERS OF EVERY VARIETY OF
TACKS AND SMALL NAILS.
GOODS MADE TO SAMPLE.
Also, Fine Swedes Iron Tacks for Upholsters and Trimmers' use.



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Successors to
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Manufacturers of
THE GENUINE
COES
Screw Wrenches.

PATENTED,
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December 26, 1871.
December 28, 1875
August 1, 1876

The backstrain when the wrench is used is borne by the bar—not by the handle.
The strongest Wrench made, and the only successful Re-enforced Bar.
None genuine unless stamped

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Our Agents, GRAHAM & HAINES, 113 Chamber St., New York, carry a full line of our goods, and will be pleased to serve you at factory prices.

AN IMPROVED
LEVELING INSTRUMENT.

PRICE OF INSTRUMENT COMPLETE, $20.
Adapted to the use of Architects, Engineers, Masons Builders, Farmers and others.
This instrument is made of Brass and Iron, furnished with both mason's (short metal) and surveyors' tripod, and put up in a handsome wooden box, with strap. The only low-priced Level that can be thoroughly adjusted in the field.

A NEW LEVELING ROD.
This rod is round and made in two sections; is united by a solid screw joint, as if of one length, and has a target. There are two scales, one side being Engineers' (feet, 10ths and 100ths) the other Architects' scale (or, feet, inches and 8ths). Price, $6.

WM. T. COMSTOCK, Manufacturer,
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Circulars and discount to hardware trade furnished to dealers sending their card.

TREE AND HEDGE TRIMMER.

Unsurpassed for cheapness and durability. Unlike any other make, it combines a perfect lever principle with a blade working in a slotted steel hook.
Send for illustrated circular and price list.

E. S. LEE & CO.,
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THE WIRE GOODS CO.,
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MANUFACTURERS OF
SHARP GIMLET POINTED
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WIRE BENDING A SPECIALTY.
Wire Straightened and Cut to Length.

RIFLE MANUFACTURERS.
Dealers' Firm Names put on when desired.
GUNS
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WHOLESALE ONLY.
American and English Goods. Fishing Tackle. Winchester and Other American Rifles.
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Dealers who visit us will always find Job Lots.
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BARNES' SAWS.
Complete Outfits for Workshop Business.
Lathes for Wood or Metal, at
CHARLES E. LITTLE'S,
(Eastern Agency. Factory Prices.)
59 FULTON ST., NEW YORK.
Descriptive Catalogue Free.

SCIENTIFIC AND TECHNICAL.

Spontaneous Combustion.

More than a century ago the subject was brought to the notice of scientific men through the occurrence of mysterious fires, and experiments were then made which confirmed the theory of spontaneous combustion. In the latter part of the last century fires without apparent causes in ships led to the discovery that fire soot moistened with hemp-oil varnish might set itself on fire. The presence of oil in piles of hemp and flax caused an immense fire in Plymouth Dockyard in 1840, and not many years later a great amount of property was destroyed at the Liverpool Dock Warehouses by a fire caused by the spontaneous ignition of damp cotton. Many instances of fires in ships due to similar causes might be mentioned. "One of the finest blocks of buildings in an Eastern city was destroyed just before being ready for occupancy by a fire started in an unused closet in which the painters had thrown their overalls, these garments being presumably loaded with linseed oil and turpentine."

We mention below some of the well-known causes of spontaneous combustion: Coal containing iron pyrites moistened with water. Some explosions in coal mines are attributed to this. Hay, flax, jute, wool and cotton in a damp state. Oats and grain stored damp or partially cured. Piles of vegetable fiber, including "excelsior," impregnated with oil. Oily iron filings or turnings mixed with a little cotton waste. Oakum tow which has been used for wiping oil from machinery. Oily waste in general. Deal, which has been dried by contact or contiguity with flues or pipes conveying hot water or steam, is said to be in a condition to take fire on exposure to air; but this is doubtful. We may add that rats and mice have a fondness for the oily waste which they work into their nests, thus hastening by the heat of their bodies its ignition. These little animals also have a liking for phosphorous, and fires have probably been caused by their nibbling the heads of matches for the sake of that substance. Advantage is taken of this appetite by the makers of a phosphorus paste used to poison the troublesome rodents. While speaking of matches, it is worthy of remark that the instances of their spontaneous ignition, although they require a comparatively low temperature to effect inflammation, are remarkably few, and it is curious that there are few or no recorded cases of the spontaneous ignition of gunpowder.

Oily waste seems to be the principal offender in this matter, but it is claimed that mineral oils are not dangerous. The sun's rays or artificial sources of heat increase the rapidity of the process. The importance of the subject has been recognized by insurance companies, and the secretary of the Mutual Fire of New York has sent a circular to the members of his company concerning spontaneous combustion, and stating that where carelessness is discovered in regard to its well-known causes policies will be discontinued. The responsibility of a fire has been often put upon an imaginary incendiary, when spontaneous combustion should have borne the blame. Enough has been said to show that the subject is of great moment to painters. We have before cautioned our readers against the danger of leaving oily waste unprotected, and hope this recurrence to the matter will incite greater precaution in the carriage shop.

A New Telegraph Soldering Iron.

A very convenient soldering iron for the use of linemen in erecting and repairing telegraph or telephone lines has been devised by Mr. J. O. Fry, of the National Telephone Company, Nottingham, England. The bit is hollowed out into a well for receiving a pool of liquid solder, a groove being formed to carry off excess into a chamber within the handle. The joint to be soldered is laid in this well. The iron is so constructed that new bits can readily replace the old, while the flat side of the iron is used in the ordinary way. By its means eight or more joints can be soldered at one time.

Anthracene and Light.

According to *Engineering*, the substance known as anthracene has been found by Dr. Tommasi to possess a new property—namely, a sensitiveness to light which will doubtless prove of value. Anthracene, on exposure to light, acquires different physical and chemical properties without any change in its composition. If a cold, clear saturated solution of anthracene in benzol is exposed to the direct rays of the sun, it becomes turbid and deposits crystals, which have received the name of paranthracene.

Tester's Telephone.

M. Tester, of the French telegraph adminstration, has devised a magnetic telephone which has given good results. It resembles a watch, with the glass replaced by an ebonite mouthpiece. The iron plate vibrates before a double magnetic ring, having projections like the indented edges of two concentric cups. The magnetic polarity is different in the two rings, one ring presenting north, and the other south poles. Each ring is provided with a fine coil of wire, and the entire magnetic field is traversed by the current.

The Parker Gas Engine.

Mr. S. C. Parker, of Robinson, Kan., has for some time past devoted his attention to the improvement of a new gas engine, which is now being turned out by a company at Yonkers, N. Y. Mr. Parker claims that in gas engines of the compressing type, as heretofore constructed, the greatest power produced by the ignited charge is brought to bear under serious disadvantages. The combustion taking place when the piston is almost at the end of its stroke, only a small leverage is available, and the gases are unable to expand rapidly enough so as to prevent an appreciable loss of heat through the cylinder walls. In the Parker engine the charge is compressed in separate compartments or auxiliary chambers, communicating directly with the bore of the cylinder, and controlled by the piston in its travel; in this way but a small part of the charge is allowed to burn while the piston is starting on its power stroke, the balance of the charge being successively exploded by the flame of the first ignition. By this means very rapidly burning mixtures can be used without causing shocks. Another novel feature in the arrangement of this engine is the admission valve for the air and gas, being located inside the cylinder-head and operated by a cam having an intermittent movement, first moving to admit the charge, then closing the ports, remaining stationary while the charge is being compressed and during the power stroke. In this manner no friction is produced, the internal pressure, while the valve is stationary, pressing it firmly to its seat. The ignition of the primary charge is effected through the agency of a current of electricity, generated from a small dynamo operated by a ½-inch belt from the crank-shaft. The advantages claimed for this mode of ignition are that there is no danger of the igniter being extinguished, wind having no effect upon it; no matches are required, and by simply turning the fly-wheel once or twice the spark is produced. The engine is controlled by a governor, which regulates the speed according to the quantity of gas consumed, and the labor performed is in direct proportion to the amount of gas used. The consumption of gas in medium-sized engines, per indicated horse-power, is stated to be about 20 cubic feet per hour.

Penning's Steam Joint.

An improved steam and hydraulic joint, invented by Mr. E. Penning, of London, England, attracted some attention at the recent engineering exhibition. According to Mr. Penning's system, the flanges of the pipes are furnished with grooves of a triangular shape, into which rings of a similar section are inserted, forming, when the joint is made, a triangular or wedge-shaped washer, of which the apex is nearest the periphery. The washers are made of prepared or ordinary india-rubber, patent packing, asbestos or any other suitable material. It will be understood that, from the form and position of the washer in the joint, it will resist considerable pressure. It is said to have been tested under a hydraulic pressure of 4000 pounds, and to have given entire satisfaction.

Connecticut Clock Industry.

In 1807 Eli Terry, of Plymouth, set himself the task of making 200 clocks. People declared him crazy, and said that, even if he lived to complete the task, he never could sell so many. Chauncy Jerome, a pupil of Terry's, is the father of the Connecticut clock industry. Terry laboriously made his clocks all out of wood, with a saw and jack-knife. He sold the clocks in New York at $25, without cases. In a few years he sold out to Seth Thomas and Silas Hoadly, former employees. In 1814 Terry made his first shelf clock. About that time Chauncy Jerome began, although an aged friend tried to discourage him, because the country was already flooded with clocks. In 1825 he was selling his clocks all over the country, and last year the company of which he was the founder sold over 2,000,000 clocks, which are sent to all parts of the world.

The Southington Globe Clock Company will manufacture a globe clock, the invention of Samuel Moore, of Providence. It consists of a solid iron frame on which is printed in clear colors the most accurate representations of the earth, in accordance with the most recent discoveries, and to this is attached a fine eight-day chronometer clock. The globe and dials are supported by a cast-bronze meridian ring, on which are engraved the 90° of longitude. Circling the globe at the equator are two flat metal rings; on the large one is lithographed all the large cities of the world that are located on different degrees of longitude; on the outer edge of this plate are the 180° of longitude east and west from London, and each city is placed on its correct degree of longitude. Inside the larger plate and meridian ring revolves a dial, on which is lithographed the 12 hours of day in red figures, and the 12 hours of night in black figures. The dial is connected with the movement and revolves once in 24 hours.

At the north pole is a small bronze ring (connected with the movement through the globe), having cut upon it the 60 minutes of the hour, inlaid in black, and revolving once each hour. The annual motion of the earth around the sun is shown by placing the clock upon the table, the north pole pointing toward a lamp elevated to reach 23° north latitude, representing the sun, showing the relative position of the earth to it in June; and when the sun is on the tropic of Cancer it is summer. Move the clock one-quarter revolution, keeping pole to north, and it is fall; move the clock another quarter and the sun has reached the tropic of Capricorn and it is winter; move the clock the last quarter and it is spring. Local time is indicated by the meridian so marked. By placing the equatorial plate on which is the name of the city whose time is used directly against the meridian marked local time, then by glancing around the equatorial plate, one can ever have the time directly against the name on the hour ring, giving universal time.

Speaking of the closing of colleries in Yorkshire, England, a correspondent of *Ryland's Iron Trade Circular*, says: "It is somewhat remarkable that while in the past 10 years 10,000 persons have been added to the number employed in the mines of this country, and the output has increased from 14,500,000 to 19,000,000 tons of coal, 137 pits have been closed. With the wane of the "good times" the closing of pits began, and it has gone on ever since in a regular manner. In 1873 there were 30 colleries opened, and 97 more were being sunk or projected, and were opened before the middle of 1874. In that year prices fell, and four pits were closed. Next year 15 were abandoned, and for the years following the numbers were 22, 30, 20, 10, 13, 13, and last year 14. Among these were some very large concerns. Some of the pits are again at work with a very largely reduced capital. Last year there were 452 collieries in the country, 15 of which were being sunk."

A new company is about to commence operations in Pittsburgh for the manufacture of carbons for electric lights. As reported, the capital amounts to some $50,000, and work is to be commenced as soon as the stamps and other machinery arrive.

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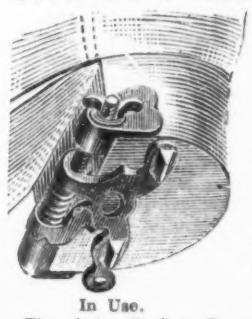

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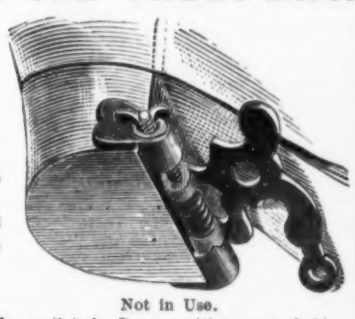

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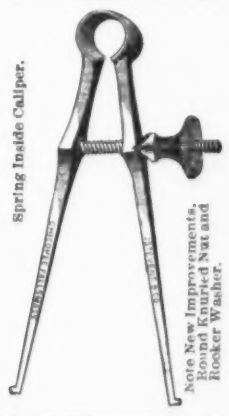

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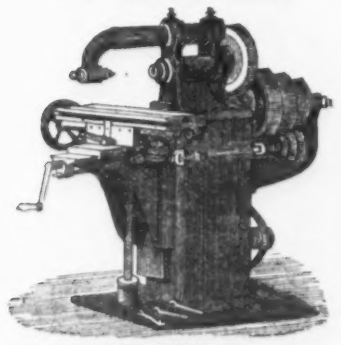

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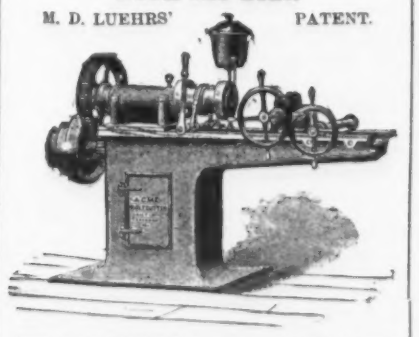

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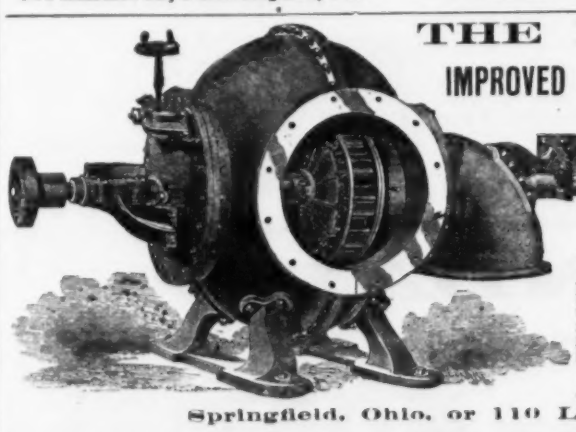

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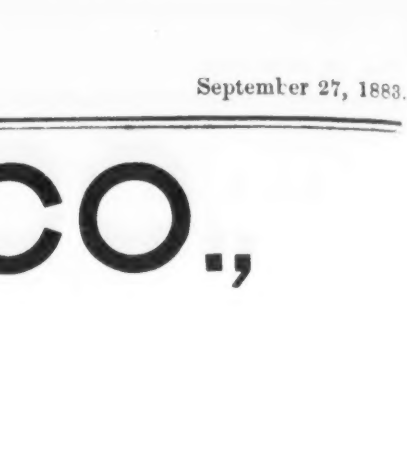

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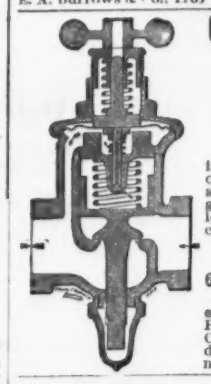

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The Iron Fields of Sweden.

A writer in the *Colliery Guardian* remarks that those who derive their opinion about Sweden from perusing guide books and have accordingly learned to regard it as a country producing little else than timber, grain, cattle and matches, may experience surprise at hearing that its annual exportations of iron and steel amount in value to £2,000,000, while, besides, a considerable quantity of copper and other metals are sold abroad. Of this exportation, by far the larger part finds its way to Great Britain. According to the figures given in the annual statement of trade, the value of Swedish iron imported into the United Kingdom now exceeds $7,500,000 yearly, though doubtless a fair percentage of what appears in those tables is subsequently reshipped to North American ports. That countries so naturally rich in iron deposits as Great Britain and the United States are should draw even a portion of their supplies from Sweden is a fact demanding some attention, but the feeling of interest is greatly intensified when we remember that in another two or three years, by which time the railway from Ofoten Fjord, on the Norway coast to Haaparanda, on the Gulf of Bothnia, will be completed, all the mineral wealth of Southern Lapland will be opened up, and enter into competition with British and Bilbao ores, to the not improbable exclusion of the latter.

The mines of Gellivara, lying midway between Norway and the Gulf of Bothnia, have long since acquired a certain celebrity—no inconsequential proportion of the Swedish iron used here being obtained from these parts. But whatever measure of fame these and other vicinal beds may possess, they seem destined to be eclipsed by the superb deposits lately explored near Lake Luosajärvi, about 100 miles from Ofoten Fjord, on the proposed line to Gellivara and Haaparanda. At present Stockholm is the great center of the iron export trade of Sweden, but when the new railway is open it is expected that ore from the Luosajärvi-Gellivara districts will be entirely shipped from Ofoten Fjord, thus obviating the long *détour* now necessitated through the Cattigat and Skager Rack from all Bothnian ports. Besides immensely shortening the distance and cost of transport to England, the new route will possess one inestimable advantage—Ofoten Fjord is open to commerce all the year round, whereas Stockholm is frequently ice-bound for months during the winter season.

To judge from an official report made by the chief geological surveyor of Sweden, the mines at Kirunavaara and Lusravaara, near Lake Luosajärvi, must surpass nearly all known mines in richness and abundance. The ore bed in the former extends in one unbroken length for over 4500 yards, varying in breadth from 50 to 250 yards, the the whole covering about 75 acres. Unfortunately, a large portion of this immense bed is so heavily impregnated with phosphorus as to be quite unserviceable until the ore has undergone the customary dephosphorizing processes. However, three tracts, estimated to produce over 56,000,000 tons from the section above the lake's surface, are almost free from this demerit, the percentage of phosphorus in them varying between .03 and .047 per cent. Lusravaara is not nearly so large or productive, being 1455 yards long by 50 yards wide in its broadest part. Still, it is reckoned to contain 27,000,000 tons of ore above water-level, all of high quality and suitable for immediate conversion into Bessemer steel. In both mines the ore assays about equal, containing a large percentage of iron, with a small proportion of phosphorus. In all, then, these two beds are computed to produce 83,650,000 tons Bessemer ore from the strata above the level of Lake Luosajärvi, added to which the same levels contain about 204,000,000 tons of inferior ore, capable of being utilized by dephosphorization. There is, as well, to consider the ore lying beneath the lake's surface, and this reserve may well be considered inexhaustible. The chief geological surveyor estimated upon Lusravaara producing 230,000 tons for every meter deep excavated below the water line, and as the superfices of this mine are barely 12 acres, Kirunavaara, which, as stated, contains over 75 acres, may be expected to yield about 1,500,000 tons for each such similar distance dug below.

Some other deposits at Swappavara, between the Tornea and Kalix Rivers, and about 20 miles from Lake Luosajärvi, are almost equally rich, while numerous other important beds have been discovered in the same vicinity; indeed, from Gellivara, which lies midway between the Atlantic and the Gulf of Bothnia, the entire country to the northwest, almost as far as the Norwegian frontier, is interspersed with iron and other metallurgical deposits. There seems no reason to question the practical inexhaustibility of these beds, and even if allowance is made for possible exaggerations, this district should be capable or producing 500,000,000 tons of iron from the dozen or so mines already explored—sufficient to satisfy the world's present requirements for another 20 years at least.

On the other hand, it is hard to place implicit faith in the asserted assays. For ore to yield 70 per cent. of iron, as claimed, is something more than unusual, high though the general character of Swedish iron be. Indeed, the statement is almost incredible. Bilbao ore is not nearly so rich or productive, and if the new beds in the Juckasjärvi region yield on the average 50 per cent. of iron in bulk, they will become most formidable competitors for the Bilbao merchants. Ofoten Fjord is within a few days' reach of the iron centers of England and Scotland, while the mines themselves are scarcely 100 miles distant from that port. If it be true, then, as asserted, that the ore can be sold at about $1 per ton at the place of production and leave a net profit of one-half, it is not difficult to estimate its probable cost at Newcastle or Glasgow, nor to appreciate the stupendous influence which this new rivalry may exercise over many of Great Britain's industries. Labor is exceedingly cheap in Sweden, while the arts and sciences of mining are there carried to the highest perfection. Railway freights are also reasonable, few lines having cost more than about $30,000 per mile to lay, many much less, the average rate all round being barely two-thirds that sum. In addition, coal is plentiful, and in a few years' time the native article may be anticipated to almost wholly supplant its imported rival. Experiments show that, both as regards price and burning quality, 7 tons of Swedish coal are equivalent to 5 tons of British. Already many of the railroads are entirely supplied from native sources, and as these results have so far proved satisfactory, this revolution is likely to gain rather than lose ground, especially as the output price at the home mines is constantly being reduced. Even at the present time, from one-third to one-half the total coal consumption is of this origin, whereas only a few years ago almost every ton of fuel used in Sweden was bought here. With ample water-power and plentiful supplies of timber and coal in near adjacence, there is every reason that these Lapland beds should answer; nor need it be surprising if the 1,000,000 tons annual export upon which the projectors of the Ofoten-Haaparanda Railway calculate should be far surpassed within a few years.

Economic Tests in England.

Mr. David A. Wells, in the course of a recent communication to the *Tribune*, suggested a decisive test for determining the questions at issue between protectionists and free traders. This was to compare the results of cotton manufacture in Great Britain and the United States between 1860 and 1880. Mr Porter, in a lucid and able letter published in a recent issue of the *Tribune*, accepts this challenge so far as the exhibits of the increase in the exportation from Great Britain of pounds of cotton yarn and yards of cotton cloth and in the total value of the exports of all cotton products during the period designated are concerned. In doing this he restores a vital factor of the problem which free traders are accustomed to eliminate as of slight importance—namely, the enormous diminution in the English manufacturer's rate of profit. He proves that while there has been a large increase in the number of yards and pounds actually manufactured and exported, the prices obtained are relatively lower, having fallen far more rapidly than the raw material itself, and the rate of profit has steadily decreased. With the tariffs of the world leagued against it, and foreign manufacturers taking rank as competitors, England has been forced to cut down its rate of profits on exported goods, until Manchester factors confess that they are living on their capital, and smaller manufacturers are going to the wall, especially in Scotland. England has become the dumping-ground for the surplus goods of foreign manufacturers whenever it becomes necessary to sacrifice them, and the disturbance created by these importations and by the development of the world's industries involves the necessity of cheapening products, cutting down wages and reducing profits. The result is that while double the number of yards or pounds of product may be exported, the English industries themselves are not flourishing, as the money value of what they make has hardly increased 6 per cent., and that the reduction in the price of raw cotton accounts for only a small proportion of the scaling down of profits.

These conclusions are grounded upon trade statistics of English manufactures, and also upon the direct admissions of the *Economist*, the chief economic authority in Great Britain. That journal describes, in terms which cannot be misconstrued, the process of extinction in the manufacturing interests of Scotland, where the number of cotton mills in operation has steadily diminished, and many signs of decadence are apparent. That country was once the seat of a flourishing cotton industry, but now it is fast losing its trade. The table which Mr. Porter has compiled is a comparative exhibit of the number of mills, spindles and hands employed in Scotland in 1850, 1861 and 1883, and contains startling evidence of the decadence of the cotton industry in that quarter. What has occurred in those five counties in the North is also taking place in the great centers of the English trade. The weakest manufacturers are being pushed to the wall, and the strongest establishments are conducted on the narrowest margin of profit and the lowest schedules of wages. When, therefore, Mr. Wells is content to rest his case on the increase in quantity of the exports of English cotton goods, and considers that increase irrefutable evidence of the prosperity of those manufactures under free trade, he leaves out of the problem some of the most essential factors.

Arrival of a Krupp Steel Shaft.—Among the importations of iron and steel made at this port last week was a large crucible steel shaft, which arrived on the steamer Main from Bremen, Germany. It was forged at Krupp's Steel Works, at Essen, Germany, and was sold by Messrs. Thomas Prosser & Son, the New Yorks agents of those works, to Mr. James Rees, of Pittsburgh, for use on the steamboat Boaz. This steamboat is a stern-wheel towboat of the type used on the Ohio River. The shaft is 32 feet 7 inches long, and varies in diameter from 13½ to 13⅝ inches. Its weight is 15,916 pounds. As a specimen of the class of forgings turned out by the famous Fried. Krupp it is well worthy of inspection, though it does not rank among the largest shafts made. It was started on its trip to the West via the Pennsylvania Railroad from Jersey City on Friday afternoon.

According to recent figures, two-thirds of the total quantity of iron imported by Turkey is British, the remainder being Swedish. The latter is used for horses' shoes and nails and other articles in the manufacture of which soft metal is required. Importations of iron from other countries are inappreciable. The total value imported this year was about $105,000. Copper is exclusively British, and steel Austrian. The former represented this year $7750, and the second $13,850. Two-thirds of the pewter used in 1882 was imported from Great Britain, the other third from France, amounting together to $8500. Lead came in equal parts from Great Britain and France, but only to the value of $1000, while zinc for an equal value was exclusively imported from the latter country.

The Iron Age

AND

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The Condition of the Trade.

The absence of marked features continues to be a characteristic of the iron trade. Prices do not vary more than a trifle, although it must be said that such variations are, almost without exception, in favor of the buyer. But there is no great eagerness to sell, and no concessions are being held out to buyers to induce them to take hold more vigorously. The hand-to-mouth purchases seem to be important enough in the aggregate to keep production within reasonable bounds, and there is apparently no anxiety on the part of sellers to provide for the future at the current prices, or any inclination on the part of buyers to lay in large stocks in anticipation of coming wants. There is no timidity on the part of steel and bar-iron dealers in this vicinity in laying in stocks, however, as their assortments seem to be pretty complete. They evidently do not fear lower prices, being well assured that much lower figures will not soon be reached under the prevailing conditions affecting the cost of raw materials and the rates of wages. This would seem to be an indication of health and stability.

There is more willingness among pig-iron makers to make contracts ahead than was the case a short time ago. Few furnace companies have been anxious to sell their product for more than two or three months in advance, lest a demand should spring up in the meantime and cause a rise in prices of which they would not be able to reap any benefit. But now the feeling has become general that no rise is to be expected for the present, although some briskness in trade is anticipated before the close of navigation. Domestic producers now have the market almost entirely in their own hands, except, of course, in those few lines in which low duties make foreign competition too powerful to be resisted. Imports of iron and steel generally have very greatly fallen off during the past month, and agents of foreign houses report that they are making few sales for future delivery.

Whether the Pacific railroads will be able to maintain their monopoly, now that another line of transportation has been opened between the Atlantic and the Pacific, is an interesting question to merchants who have been coerced into the payment of extortionate rates of freight. Will the several corporations interested make common cause, or will they compete in offering the broadest facilities that they can afford? Congress, in making enormous grants of land in furtherance of these enterprises, certainly did not intend to establish or to encourage monopolies inimical to the public weal. On the contrary, the design distinctly was to provide the most ample means of transportation across the continent, untrammeled by arbitrary management. The Southern Pacific Railway, so we see it charged, "is merely a "second track to the Central Pacific, owned, "managed and operated by the same men, "upon the same maxim of exacting all that "the trade will bear." The Northern Pacific is supposed to represent Villard as against Gould, and to be in every sense independent, but what transformations may yet take place none can tell.

American Interests Jeopardized by a Franco-Chinese War.

In order to be better able to appreciate the inconvenience and losses likely to result to American interests from a war between France and China, as now threatened, we have compiled some figures having reference to our commercial intercourse during late years with the Chinese Empire.

AMERICAN TRADE WITH CHINA (HONG KONG INCLUDED).

Fiscal year.	Import from China.	Domestic export to China.
1879	$18,084,694	$5,930 954
1880	24,111,698	8 256,828
1881	24 717.557	8,361,919
1882	22,638,433	9,106,902

This shows a steady gain in the export of domestic goods to China and Hong Kong, and great steadiness in the amounts imported from there. Among imports there were in the fiscal year 1881:

	From China.	From Hong Kong.
Tea, pounds	44.140,817	.....
Sugar, pounds	16,081,165	11,933,272
Silk, raw, pounds	1.563,228	.....
Ditto goods	$176,921	.....
Rice, pounds	21.133,504	2,695,527
Spices, pounds	843.131	563,807

It will be seen that the most indispensable Chinese goods—tea and silk—are drawn from the treaty ports, and not from Hong Kong.

Our average import of tea during the 20 fiscal years 1863–82 was 32,633,190 pounds from China and 16,809,317 from Japan. China exported tea to all quarters through the treaty ports during the quinquennial period 1877–81 as follows:

	Pounds.	Value.
1877	254,621,867	$44.098,722
1878	253,194,133	43,217,768
1879	279,615,733	44,916,848
1880	281,013,812	50,019.437
1881	286,421,448	40,046.375

This is exclusive of the amounts gone overland to Russia.

Chinese silk exportation through the treaty ports to all countries was as follows: 1880, pounds, 15,372,614—$41,904,017; in 1881, pounds, 14,168,088—$37,615,480. Out of the total Chinese export through the ports in 1880 and 1881, taken together, $206,440,000, silk and tea alone constituted $175,585,309, or 85 per cent.

Our export to China chiefly consists of quicksilver and cotton goods, and fluctuates a good deal, according to the condition of the Chinese market, especially as regards cotton goods. Thus, in the fiscal year 1880 we shipped to China only 4,529,622 yards of cotton, and the ensuing year 48,958,928 yards, or 11 times as much. It is somewhat similar with quicksilver, of which in 1880 we shipped to China and Hong Kong (chiefly the latter) 2,081,822 pounds, and in 1882 only 1,565,945 pounds. If in Chinese estimation the goods of outside barbarians—as they call foreigners generally—are cheap and they are not overstocked, they take any amount of them; hence the extreme fluctuations in the amounts which of any article China is capable of absorbing in any given year, rice in particular. A dearth of the latter in China influences the price during a season throughout the East, and the rates of freight with it.

Of tin from the Straits China usually takes 5000 to 6000 tons, and of lead from England, 12,000 tons. Of American petroleum, China took in 1881 only 3,382,000 gallons; last year 8,256,000. Of opium China took last year 13,365 piculs less than in 1882, which made a difference in the amount of this drug taken from British India and Turkey in a single year of $9,666,000.

From these figures some idea may be formed of the disturbance in trade generally, and in our own in particular, in certain important articles, such as tea and silk, which a blockade of the treaty ports of China would create, and the rise in price that would ensue in such articles if we were reduced to the little Hong Kong could furnish and to what Japan can muster, for China is and will remain by far the greatest source of supply, despite the efforts of the Japanese to supplant her in the world's markets in the two staples named.

The following table shows the tonnage entered and cleared in Chinese ports:

	Tons.		Tons.
1876	10,226,421	1880	15,874,352
1877	11,983,591	1881	16,640,278
1878	13,446,394	1882	17,588,852
1879	13,927,121		

Of the clearances, 14,337 vessels with 10,814,779 tons were British, and only 192 with 172,381 tons were French.

The unpopularity of a Franco-Chinese war among the merchants, manufacturers, bankers and shipowners in England, Germany and the United States, and even among the silk manufacturers of France, need not, with such figures before us, be discussed. Even from a political point of view such a war would be unpalatable to Great Britain, for if the French were to succeed and gain a firm foothold on the southern border of China, British dominion in India would be seriously hemmed in between Russia in Turkestan and France in Tonquin. The bare possibility of such a struggle is viewed with alarm and disgust on all hands, except by French politicians and military men, and the outcome of the diplomatic shiftings is waited for with general impatience.

Why We Import Iron and Steel.

It is a somewhat singular fact that our tariff laws do not prevent the importation of foreign iron and steel, although they are characterized as protective by their advocates and prohibitory by their opponents. Trade so adjusts itself to this tariff obstruction that there is a constant influx from the outer world, which varies in volume, of course, with the condition of domestic business, being greatest in times of commercial activity and least in periods of depression. During the late boom, when the demand for all kinds of goods was so strong that it far exceeded the home productive capacity, and prices shot upward to an unreasonable hight, the domestic supply was greatly augmented by enormous receipts from foreign countries, and the highest duties were but slight barriers to the inpouring flood. Now, however, the demand is much below the proportions of 1879–80, prices have fallen very considerably under the rates which then prevailed, the domestic supply of most articles is greater than is needed, and but a comparatively moderate quantity of iron and steel is imported. In the present condition of business, therefore, most duties are high enough to be protective, and some are so high as to be theoretically prohibitory. The question then arises, Why do we import any iron and steel? An inquiry into this subject develops some curious facts. We are importing from week to week, and almost from day to day, pig iron, steel rails, bar steel, bar iron, steel tires and forgings, sheet iron, old or scrap iron and steel, cotton ties made of hoop iron, wire rods, tin plates made of iron and steel sheets, machinery, &c., and yet, under the existing tariff, all these articles, except cotton ties, wire rods and tin plates, pay duties which make them cost as much as, and some of them a great deal more than, similar articles of home production.

Various reasons are given for these curious features of trade. When foreign iron and steel cost only a little more than domestic brands, those who are in the habit of using the former will continue their use rather than change to something with which they must make experiments before they can be certain of results. Scotch pig iron, for instance, is purchased on account of its well-known qualities of great fluidity, slight shrinkage in casting and scrap-absorbing power. As long as it can be obtained at the same price as ordinary domestic foundry irons, or a little higher, it will find a sale here to a reasonable extent. But prejudice often goes further than preference in continuing the use of an old brand long after competing brands are offered at much lower prices. Especially is this the case where the cost of the material bears a very slight relation to the value of the finished article. A cutler or edge-tool maker will cling to a favorite brand of steel and try no others, even though they may be offered him at a much lower price, for the reason that he knows he can depend upon obtaining uniform results with the old brand, and the difference in cost of material is not a sufficient inducement to him to try experiments which may endanger the reputation of his finished wares. In this connection the fact should not be overlooked that steel rails are still being delivered here from foreign countries on contracts made when prices were high and home mills were not in a position to take all the orders offered them.

Again, there are importations of a special character for specific purposes, such as spiegeleisen to be used in the manufacture of steel, of which we do not yet make a sufficient quantity to satisfy our requirements. Bessemer pig iron may also be classed in this category, though its importation is rapidly diminishing through the efforts put forth by the steel makers to supply themselves, as well as the decline in the price of foundry pig iron, which will eventually cause Eastern blast-furnace managers to seek contracts for Bessemer iron. In the special class of importations is also Swedish bar iron, which is used by crucible-steel makers on account of its exceptional purity, and, having been so used for many years, will probably continue to be in demand by them. But among these special importations should be included fine cutlery, machinery, Russia sheet iron and steel forgings, most of which command a sale in this country on account of their excellent quality and peculiar fitness, the question of price being a secondary consideration. Old or scrap iron and steel move with the tide of trade, and come here in compliance with the demand for them from our rolling mills and steel works. Tin plates, wire rods and cotton ties may be relied upon to appear at our ports of entry in large quantities, as our people do not, under the existing very low duties, attempt to make the first and last at all, and make rods only spasmodically.

There is a movement, however, which should be mentioned in connection with this subject, but which is usually lost sight of in considering our import trade in iron and steel. A considerable part of such material is brought here to be re-exported. Steel rails and bar iron pass through the United States bound for Canada and Mexico, and some pig iron goes through this country to Canada. A great deal of steel, bar iron, pig iron, &c., is brought here, manufactured into marketable forms, and exported under allowance of drawback, which amounts to nine-tenths of the duty paid. This enables our manufacturers to use as cheap material as their competitors in other countries when producing goods for foreign markets, and it also explains why foreign iron and steel are often imported at an apparent loss.

British Iron and Steel Exports.

Recent issues of English papers contain extracts from the British Board of Trade returns for August, which furnish us with the statistics of the exports of iron and steel from Great Britain in that month. It appears that 365,500 tons were then exported to all countries, against 361,414 tons in July and 380,506 tons in June. The exports in August, 1882, aggregated 432,972 tons. These figures show that August of this year held its own very well, as compared with its immediate predecessors, but fell considerably below the record of last year's business. The following table exhibits the details of the movement in August of this year, as compared with the corresponding month of 1882:

Commodities.	Gross tons. 1883.	1882.
Pig iron	167.077	210,022
Bars, rods, &c	21,214	27,317
Rails	77.638	89,280
Hoops, sheets and plates	29.489	29,565
Wire	5.549	5,268
Tin plates	25 275	24,741
Cast or wrought	28.642	25,015
Old iron	4.793	8,944
Steel, unwrought	4.432	11,528
Manufactures	1,391	1,292
Total	365,500	432.972

The total exports of iron and steel to all countries from Great Britain in the first eight months of this year aggregated 2,699,293 tons, against 2,931,144 tons in the corresponding period of 1882, thus showing a considerable falling off. As the exports to the United States in the same periods were respectively 484,935 tons and 866,640 tons, it will be seen that the decline in British exports is wholly due to the decreased shipments to this market. The course of British trade with this country during the present year is shown in the following table of monthly exports hither:

	Tons.		Tons.
January	55,308	May	60,871
February	49,201	June	64,638
March	55,068	July	70,483
April	62,913	August	66,633

The figures for each of the last three months have been considerably higher than the average for the eight months, which is 60,617 tons. Early in the year Great Britain sent light shipments to this side of the Atlantic, and it seemed as though her trade with us was destined to be restricted to tin plates and a few other commodities, which, for good reasons, will be bought from her under any circumstances, but the indications were not borne out by subsequent occurrences, principal among which was an increase in our purchases of pig iron. Any prognostications of the future of our trade with our British cousins are liable to miscarry, but there now seems to be very good ground for believing that these monthly statements will henceforth show diminished purchases of all commodities which come in competition with goods of native manufacture. The depression in our domestic trade is bearing down prices, and low prices are inimical to the import trade.

We have compiled the following table to show how British exports of iron and steel to the United States in the month and eight months which ended on August 31 of this year compare with the corresponding periods of last year:

Commodities.	August. Gross tons. 1883.	1882.	Eight months. Gross tons. 1883.	1882.
Pig iron	29,374	67,609	198,175	341,782
Bars, rods, &c	305	1,477	6,703	14,753
Rails	9,683	13,385	49,827	155,408
Hoops, sheets and plates	3,667	5,249	22,820	24,065
Tin plates	21,114	20,709	141,734	148,67-
Cast or wrought	352	442	3.754	4.557
Old iron	1,181	4,916	37.324	64,58-
Steel, unwrought	957	8,476	24.598	112,325
Total	66,633	122,263	484.935	866,640

These figures plainly indicate that this country is still a very good customer for British iron and steel. We have made some calculations which present this matter in a stronger light. Of the total British iron and steel exports in August, the United States took over 18 per cent.; of the exports of tin-plates, we took over 83 per cent.; of old iron, 25 per cent.; of unwrought steel, 22 per cent.; of pig iron, 18 per cent.; of rails, 12 per cent.; of hoops, plates and sheets, 12 per cent. There are some articles which are not included in the above table which are worthy of record. The value of the hardware and cutlery sent to the United States from Great Britain in August last was £33,606, against £58,986 in August, 1882; the quantity of lead was 3 tons, against 10 tons; the quantity of unwrought tin was 851 cwt., against 5116 cwt.; the value of steam engines, £119, against £4820; the value of other machinery, £19,608, against £5470. All these items exhibit a very heavy falling off in this year's trade as compared with that of last year.

An Order in Council, dated September, 1883, has definitely fixed the new legal standard wire gauge for Great Britain. It is hoped, apparently, by the Board of Trade that this gauge will supersede the B. W. G and the various local gauges, such as Stubs, Warrington, and the numerous private gauges by which wire and sheet metals have been sold. Although the Board of Trade have taken every possible precaution and have attempted to harmonize the diversified interests of the kingdom, yet, from the surface indications which have come to hand, it seems that the lesson of the old fable is to be repeated. In trying to please everybody no one is satisfied, and the sheet-metal men are already complaining that if they adopt the new system they will experience losses of from 10/ to 15/ per ton on orders which they have already placed. They are even considering the question of buying and selling by the weight per square foot of the metal, instead of by gauge. The secret of the whole trouble is brought out very forcibly by this controversy—it lies in the disinclination to call a spade a spade. Instead of ordering metal .3 inch in thickness, they must needs order No. 1, and instead of ordering .124 inch, they must call it No. 30. The wearing of gauges and the differences which must necessarily exist between them will allow a thicker sheet to be sent than the customer supposed he was ordering, and in this way there will be a profit made. Consequently, the system finds favor with the sellers. Practically, there is no objection whatever to ordering by thickness, and then there is not the least difficulty in obtaining just what is wanted, and ascertaining with definiteness just what the maker has sent out and just how closely it corresponds with the order.

The Cause of the Business Depression.

In another part of this issue we print a report of an interview with Mr. Andrew Carnegie concerning the condition of the iron and steel trades. Mr. Carnegie possesses the double qualification of being able to talk, and to talk to the point. In the interview referred to, he does not hesitate to utter opinions which may not be entirely agreeable, but they are based on wide observation and ample experience, and therefore will be accorded more than ordinary consideration by those interested. In a few short words—"the whole world is taking a rest"—he sums up the entire situation, and we think nobody will question the truth of this brief description of the business situation. When he says, "I believe that matters will grow worse for some months," he voices misgivings which have troubled many iron and steel manufacturers for a considerable period, but which they have manfully struggled against, in the effort to believe that better times would shortly dawn upon the trade. But when he says that "no revival can take place before next spring," he shows his Scotch shrewdness in expressing himself negatively rather than affirmatively, and there is not much consolation to be derived from this way of stating his opinion as to the time at which a revival may be expected. That he expressed himself in purposely guarded language is indicated in his statement that before there can be any improvement "a much more decided curtailment of production must take "place." A decided curtailment of this character usually requires more time than the few months which now bridge the interval between us and next spring. It is therefore to be inferred, naturally, that Mr. Carnegie did not intend to predict a revival in trade with the disappearance of the coming winter, but that he simply avoided expressing himself in the discouraging terms which the situation and the prospects would prompt him to use. But he does not predict when a revival may be expected. There is no doubt that matters would assume a more healthy condition if manufacturers would "stop producing goods in advance of the country's needs," but it is hopeless to expect them to do so voluntarily, or at least until ruinously low prices force the weak concerns into idleness. In view of the depressing and unsatisfactory state of the iron and steel business on this side of the Atlantic, there is some consolation in knowing that we are not alone in our gloomy experience, but that "it is the same in England as here."

Mr. Carnegie's statements of the condition of the steel-rail trade, steel-rail production, prices and wages are of much interest. He places great stress on the fact that the only works making a profit at present prices are those which own their raw materials. He does not say that these are the works which can live when their less fortunate rivals will be obliged to cease purchasing materials to manufacture at a loss, but that is also to be inferred. The time is coming when the resources of the most thoroughly-equipped works will be tested to their utmost to keep up the industrial struggle. There are, however, 14 Bessemer-steel-rail establishments in the country, and not 12 only, as Mr Carnegie inadvertently states, though one of these works, the Union Iron and Steel Works, of Chicago, has been idle since the failure of the company last February. In the matter of trades unions, Mr. Carnegie is exceedingly liberal in his views—very much more so, we think, than are his competitors in the steel-rail trade, who, with very few exceptions, have had bitter and prolonged fights with labor organizations within quite a recent period. To sum up the conclusion of Mr. Carnegie's views on the condition of trade, his own expression may be quoted, though used in reference to a different matter—"The situation is much too serious."

Prospects in the Tin-Plate Market.

Whenever an article of consumption which we have to import almost entirely, fluctuates very little, as has been the case so far this year with tin plates, it is generally a good sign, for the inference is that such article is in a sound position, both here and in the country of production. On this side, at least, although the import has fallen off very little, the stocks both in port and inland are known to be quite light, and in certain grades there has been a scarcity at times, though unaccompanied by excitement or a sudden advance. Large as the import has undoubtedly been during the past year or two, it has by no means been excessive, considering the enormous and growing consumption, and whether the importers have made money or not, the trade has certainly had no occasion to be dissatisfied with the article, nor has the consumer, for the price has been moderate.

We have prepared a table showing the net import, so far as the official figures are at our command :

IMPORT INTO THE UNITED STATES.

	1883. Cwts.	1882. Cwts.	Re-export, 1883. Cwts.	Re-export, 1882. Cwts.
January	337,854	431,923	224	1,671
February	290,027	295,689	1,812	3,156
March	344,896	294,933	3,800	2 083
April	402 543	308,114	1,634	3,814
May	386,095	395,757	2,138	3,973
June	334,070	345,755	1,833	3 708
Total	2,104,485	2,272,201	11,441	18,425
Less re export	11,441	18,425		
Net import	2,093,044	2,253,776		
Equal to tons	104,652	112,689		
	1882.	1881.	1882.	1881
Calendar year.	4,279 738	3,660,106	23,703	9,767
Less re-export	23,703	9,767		
Total	4,256.035	2,650,339		
Equal to tons.	212.802	182 517		

The monthly average of net import has consequently been during the first six months of the current year 17,425 tons, against last year, same time, 18,781. In all last year the average has been 17,734 tons, against 15,209 in 1881. This shows a slight falling off so far in 1883. The price of ordinary brands of tin plates with the higher duty on them stood on January 1, 1883, as under, as compared with the present one :

	Jan. 1, 1883. Per box	Sept. 12, 1883 Per box.
Charcoal bright	$6.25 @ 6.50	5.62½ @ 6.00
Ditto ternes	5.37½ @ 5.62½	5.12½ @ 5.37½
Coke tin	5.37½ @ 5.50	5.05 @ 5.20
Ditto ternes	5.12½ @ 5.25	4.87½ @ 5.00

DOMESTIC EXPORT OF CANNED GOODS, ETC., DURING THE FISCAL YEARS

	1883.	1882.
Blacking	$209,998	$187,403
Farina	987,829	055,142
Spices	89,794	93,39
Preserved fruit	686,517	659,681
Paints	470,289	424,99
Condensed milk	180,505	200,490
Lard	26,618,048	28,975,902
Preserved meat	4,578,902	4,208 608
Oysters	629.636	612,793
Pickles	34,942	25,635
Preserved vegetables	119,277	181,281
Spirits of turpentine	4,366,229	3,798,034
Tinware	191,947	198,608
Varnish	188,352	187,860
Total	$39,352,265	$40,409,818

This shows great steadiness, and, judging from this export, the domestic trade in canned goods must also have been kept up to its maximum. The table above does not include petroleum in tins, which cannot be ascertained from the Government returns.

As to the future, prospects in the canning trade here seem to be fair, and building throughout the country has surpassed in its activity expectations entertained in the spring. Indeed, in every important branch where tin plate is a factor there is animation, and a fair inference is that current importations will be readily absorbed. Fortunately, the article is so situated that speculation in it is difficult. There need be no apprehensions of any unpleasant interference from this element, we think, and nothing points to any immediate change in the situation.

The Duty on Iron Wire Rods.

Under date of the 21st instant an Associated Press dispatch from Washington appeared in the daily papers as follows :

The decision of the Secretary of the Treasury with regard to the construction of the charcoal-iron and round-iron provisions of the last tariff act is adverse to the claims of the manufacturers on both points. The first question raised was with respect to the scope of a proviso in the fifth paragraph of the section of the act relating to metals, namely, "that all iron bars, blooms, billets, or sizes or shapes of any kind, in the manufacture of which charcoal is used as fuel, shall be subject to a duty of $22 per ton." This proviso, the manufacturers claimed, applied not only to the iron enumerated in the fifth paragraph, but to all other shapes and classes of iron in the manufacture of which charcoal is used as fuel. The Secretary holds that the proviso relates only to the iron enumerated in the fifth paragraph. The second question was as to the scope of the provisions of the eighth paragraph in the metal section, which says : "Round iron, in coils or rods, not less than 7-16ths inch in diameter, and bars or shapes of rolled iron not specially enumerated or provided for in this act, 1.2 cents per pound." Another paragraph in the act—the 38th in the the metal schedule—provided for a duty of but 8-10ths cent per pound on iron or steel rivet, screw, nail and fence wire rods, round, in coils or loops of certain dimensions, which were included in the enumeration in the eighth paragraph, and it was claimed that to these the rate fixed in the eighth paragraph should apply. The Secretary decides that the provisions of the 38th section shall govern the rate of duty on rivet, screw, nail and fence wire rods, although they come under the general round-iron classification in the eighth paragraph.

We have not been favored with a copy of this decision by the Treasury Department, and therefore know no more about it than is contained in the above statement. We desired to comment on the decision, and made application at the Custom House in this city for a copy of it, so that we might quote it correctly. Up to this time, however, it has not been possible to obtain a copy there, as the Treasury Department does not seem to be in any special hurry to "officially" inform the officers of the leading port of entry in the country what decisions it makes. Our informant at the Custom House pleasantly, but rather profanely, expressed his disbelief that any such decision had yet been made, although he had no doubt it would be made in the course of time, since it was the habit of the department to inform the —— press what it intended to do, notwithstanding the said department had been advised by our pleasantly spoken Custom-House official that it ought to announce its decisions to customs officers first.

Patent Office Charges.

The Commissioner of Patents recommends that the fees demanded of inventors be reduced, or at least that a new scale of rates be adopted, graduated in accordance with the character of the invention patented. If the rates charged were in proportion to the estimation in which the average inventor holds the average invention, the revenues of the Patent Office would pay off the national debt in a few years and run the General Government besides. If, on the other hand, the rates were proportioned to the actual value of inventions patented, very few would pay any fees at all. We think well of the proposition to reduce the rates, but if any radical change is to be made in our system, it would be much better to distribute the fee over the term of the patent, permitting such patents to lapse as are not worth keeping alive. We know the objection which is raised to this plan of adjusting the Government charges, and are convinced that it is not good. In one case in ten thousand it might work disadvantage to an inventor who is nursing a good thing along because of inability to introduce it, but in nine hundred and ninety nine cases it would work to the advantage of the general public, by clearing up from year to year a lot of patent rubbish which is of no use to inventors nor any one else. On the contrary, thousands of useless patents drag out the full term for which they are issued, stumbling blocks in the way of practical progress, and only coming to the front when they can be used to blackmail successful inventors or unconscious infringers. If inventors had an absolute right to protection, it would be different. The absolute right belongs to the community. This right is voluntarily relinquished for the advantage of the individual in compensation for publishing his invention or discovery to the world. It is a privilege which can be limited or restricted in any way which the public interest may demand. If the privilege is worth nothing to the inventor after he has enjoyed it for, say, five years, and he does not care to keep his patent alive by paying something to the Government, it should lapse and the invention become public property. In this respect the English system is better than ours. In England the original fees are small—about $20—but at the end of four years $250 must be paid to keep the patent alive, and at the end of eight years the tax is $500. We think this eminently fair and just. It gives the inventor his patent at a nominal charge. If valueless to him, he need pay no more. If valuable, or he thinks it so, he pays for it. Four years later he again has the option, and if his patent is unprofitable, he can let it go. It would have been millions of dollars to the advantage of manufacturers in this country if the patents which had no value in five or ten years after the date of their issue had been allowed to die.

The extracts which we publish elsewhere in regard to the evidence bearing on the efficiency of the United States inspection of steamboat boilers will, we think, be enough to convince any man that the sooner the United States Government lets steamboat boilers alone and holds engineers and owners equally and criminally responsible for any damage which may be done by explosion, the better it will be for all concerned. At the present time the inspection is supposed to decide the question of whether a steamer is in a fit condition to run. Practically, it decides that the owner of the boat must pay a certain amount of money to the inspector for performing certain ceremonies at stated intervals on board of the boat in connection with the boiler. Of the value of these ceremonies and their influence on the subsequent safety of the boiler we leave our readers to judge. If this were the first, second or third case which had happened in these waters, charity might find excuse for the accident. When, however, the inspectors repeatedly swear that on the day of inspection the boilers were of the proper thickness, and it is demonstrated that at the time of the explosion, a month or two afterward, those same plates had been reduced to the thinness of paper, we get out of patience, and charity no longer requires us to pass over the fact that there must be something worse than blundering even. Practically, somebody lies.

The production of nails by a marble mill is rather a curious fact, and one which the political economists ought to give some attention to, as showing to what extent the economy of waste products may be carried. Formerly the marble saws were very much of a nuisance around mills, and many a dump, if it could be overhauled, would show that tangled saws did their part in filling up the space. Now we believe there are scarcely any marble mills of the larger class which do not have nail machines at work when they are running. The varying thickness of the different sizes of nails of course confines the product to certain sizes to which the thickness of the saws is suitable. The varying widths of the saws themselves make it necessary to have them cut up in short lengths, so that the nail-making, to one who is familiar only with ordinary nail plate, is rather a curious process.

Much alarm is felt in Europe on account of the massing of large bodies of Russian troops on the Austro-German frontier, and other warlike movements. In former years Russia despoiled Turkey of some of her finest Provinces, which of late, in the transfer of their allegiance, seem to have felt more strongly the fascination of Bismarck's diplomacy. Shall these Provinces, in the future map of Europe, become European or Cossack ? The Russian Czar doubtless sees that this question is pressing for a solution.

Mr. Andrew Carnegie's Views.

A New York *Tribune* reporter called one evening last week upon Mr. Andrew Carnegie, who recently returned from Europe. Mr. Carnegie was found in his rooms at the Windsor Hotel, and upon being asked for his opinion of the condition and prospects of the steel and iron trade, he expressed his views as we find them recorded in the following interview, in the *Tribune* of the 24th instant :

"I think this : I consider that the whole world is taking a rest at present after a period of unusual activity During this period manufacturers generally increased the capacity of their works greatly. They are now sufficient to supply the whole world, were it as abnormally active as it is the reverse. But as great loss is entailed by curtailment of production, the works are kept running to their full capacity, although prices have fallen to figures which leave even those manufacturers who have unusually favorable facilities little or no profit, and entail a positive loss upon the average manufacturer. It is the same in England as here. One of the largest miners of coal in the world told me last month that he could only figure a profit of four cents per ton upon the coal mined by his firm. In the steel-rail manufacture the same condition of affairs exists, and the great woolen and cotton weaving houses are scarcely in better circumstances."

"Is this depression likely to continue long ?"

"In my opinion no revival can take place before next spring. Much as I regret to say it, I believe that matters will grow worse for some months before manufacturing interests can reach a profitable business. A much more decided curtailment of production must take place before there can be any improvement. This will be brought about naturally by the prevalence of such ruinous prices as will compel manufacturers to stop producing goods in advance of the country's needs."

"Are the steel and iron manufacturing firms of this country sound, or do you fear a panic ?"

"They are generally sound. While there may be a few failures here and there, nothing like a panic is possible among them."

"Has the change from iron to steel rails, and the consequent economy in the wear and tear of rails, made such a shrinkage in the yearly consumption on the part of old railway lines as to be felt by manufacturers ?"

"No, not yet. It will no doubt be a factor of great importance in the future. At present it is not. The life of a steel rail is five times that of an iron rail, and that is five years. Now, the percentage of steel rails in use longer than five years is quite small. The steel rail has entirely taken the place of the iron rail in the United States, and yet at present, in spite of the superiority of the steel rail, it is actually cheaper than the iron rail. The depression in the former is not due to reduced consumption, for in spite of the times this year's consumption will be about a million and a half tons. This fearful depression is caused by the increase in the capacity of works generally, as I stated before. As an instance, take our own works in Pittsburgh, built in 1875 for a production of 25,000 tons. This year we produce more than 150,000 tons."

"What is the present price of steel rails ?"

"About $37 per ton at the mill."

"Can steel rails be manufactured at a profit at that price ?"

"Speaking generally, no. There may be one or two mills owning their raw materials—mark that, owning their raw materials—that may make fractional profits at that price."

"How about the laborers employed in steel and iron ?"

"Out of the 12 steel mills two have recently had disputes with their men, and the works have been stopped in consequence. Labor is all that the working man has to sell, and he cannot be expected to take kindly to reductions of wages, even when such are necessary in order that he may have any work at all. I think the wages paid at the mills on the seaboard of the United States to-day are about as low as men can be expected to take. In the West, notwithstanding a recent agreement of the men to accept a reduction of 30 per cent., it now seems probable, from the very unsatisfactory outlook, that they will have to be asked to work for still less. In our own district of Pittsburgh our rule is to make a bargain in December with our men to govern the coming year. This rule has worked very hardly for our side for the past two years, as the market has been constantly falling. In this way our men have been, and are still, making much higher wages than any men either to the east or west of Pittsburgh. But a reduction of wages is inevitable in our district, though we do not apprehend that there will be any trouble about it, as our men are intelligent, and will no doubt deal as fairly with us now as they have in times past."

"What are your views about trades unions ?

"We have unions in Pittsburgh, and in all the mills west of us, except St. Louis, but no mill east of us will tolerate them. We have always held that in this free country our men have a right to belong to any union they please, and up to the present hour our relations with the trades unions have been satisfactory. I believe the trades union is of great benefit to the men, and it has certainly developed many most able men. As a rule, the more intelligent labor is the less difficult it is to deal with it, if capital only asks for what is fair and just."

"Do you look for any protracted strikes in these interests ?"

"No; the situation is much too serious. Unless the market improves, our men will readily see that it is a question of work at some price or no work at all. They will therefore be ready to meet any reasonable demand made by their employers."

OBITUARY.

JOHN C. TRAUTWINE.

John C. Trautwine, the widely-known civil engineer, died on the evening of September 15, in Philadelphia. He was born in Philadelphia, March 30, 1810. He started a business life, when 18 years of age, in the office of William Strickland, architect and engineer. He was engaged on the Delaware Breakwater for some time, and in 1836 he was appointed engineer of the Hiwassee Railroad. In 1844 he was engaged in the construction of the Canal del Dique, in New Grenada, South America, a work on which he was employed five years, and in 1849 he was engaged in the construction of the Panama Railroad, of which he and Mr. Totten were afterward appointed chief engineers. In 1852 he began the exploration of the River Atrato and its tributaries in New Grenada, with a view of determining the feasibility of an interoceanic canal route, and the report of this exploration was published shortly after his return. In that work Mr. Trautwine was authorized to undertake the construction of a canal if he deemed the same to be practicable, but after exhaustive explorations he reported against the scheme. In 1857 he surveyed the route for the Honduras Interoceanic Railway, which, however, was never built, and in 1858 he examined and reported upon the harbor of Montreal, with a view of determining the advisability of improving it as a port of entry. After this he returned to Philadelphia and engaged in professional duties, which he continued to attend to until a short time before his death. In 1851 he published the first editions of "Curves" and "Excavations and Embankments." In 1872 appeared his "Civil Engineer's Pocket Book," which is the text-book mostly used by engineers in America. He is and will be best known by his writings, which have run through several editions. His book on "Railroad Curves" is the simplest and clearest book on the subject in the English language. He also wrote a book on "A New Method of Calculating the Cubic Contents of Excavations and Embankments by the Aid of Diagrams.' The work, however, on which his reputation will chiefly rest is his "Civil Engineer's Pocket Book." It is a monument to his industry and versatility, and is, perhaps, the best single treatise on civil engineering thus far published, and it would be difficult to find any other one book which alone would be as useful to a young student of civil engineering as this. While engaged in work in tropical countries Mr. Trautwine contracted one of the malignant fevers so prevalent in those climates, from the effects of which he never recovered entirely, and which finally caused his death. He leaves two sons, William Trautwine, a conveyancer, and John C. Trautwine, Jr., who has been engaged with his father in his bookwork. Mr. Trautwine was a member of the Academy of Arts and Sciences, and of the American Philosophical Society.

THE LATE PROF. W. A. NORTON.

Prof. William Augustus Norton, of Yale College, died at New Haven, Conn., on Friday last. The Professor was born at East Bloomfield, N. Y., October 25, 1810. In 1827 he was appointed a cadet at the West Point Military Academy, from which he was graduated in 1831. On July 1 of that year he was attached to the Fourth Artillery and commissioned Second Lieutenant. On August 30 following he was appointed Assistant Professor of Natural and Experimental Philosophy in the Military Academy, and served in that position until September 30, 1833, when he resigned from the army. During a leave of absence in 1832 he joined the "Black Hawk Expedition," but was not at the seat of war. He resigned from the army in order to accept the position of Acting Professor of Natural Philosophy and Astronomy in the University of the City of New York. He resigned this position in 1838, and was engaged for the year following in arranging an "Elementary Treatise on Astronomy," which was published in 1839. During the same year he accepted the Professorship of Mathematics and Natural Philosophy in Delaware College, Newark, Del. This post he held for a year, when he was elected President of the college, and served in this capacity during the year 1850. He then went to Brown University, Providence, R. I., and took the department of Natural Philosophy and Civil Engineering, remaining in this position for two years, when he went to Yale College, New Haven, as Professor of Civil Engineering in the Sheffield Scientific School, and continued to fill that chair until his death. In 1857 Prof. Norton published the "First Book of Natural Philosophy," and in 1858 several memoirs on terrestrial magnetism and other scientific subjects. He frequently contributed articles to the *American Journal of Science* and to various other periodicals. He had the honorary degree of A. M. conferred upon him by the University of Vermont, in 1842. From 1844 he was a member of several scientific associations, and in 1873 was elected to the National Academy of Science.

Japanese miners have some curious customs which sadly depreciate the value of their work. They do not appear to appreciate the fact that "time is money." An engineer who has just returned from the mines of that country tells us that they light them in a peculiar manner. Every man entering the mine carries with him a large bundle of from 5 to 6 foot bamboo cane, slightly beaten before use. This cane is used as a torch. It burns fairly well for a few seconds until a notch is reached, when the light nearly goes out and the ashes must be knocked off, a process which must be repeated every half minute. Every six or seven minutes a new cane must be lighted, so that a good share of the miner's time is occupied in keeping his illumination in a fairly satisfactory condition. Unfortunately, Japanese miners are, besides, great smokers, and they use a pipe having a bowl the capacity of which is equal to that of an ordinary thimble. It takes two whiffs to finish it, when the process of filling up and lighting it must be gone through. Every one has probably had occasion to watch the great deliberation with which an average Irishman, when at work, will fill his clay bowl when the foreman is not watching him, but imagination simply shrinks from the task of picturing the rapid progress of work intrusted to a smoking Japanese miner.

Calling in the Bonds.

The time is near at hand when the Government will be unable to continue the reduction of the public debt by the redemption of bonds unless it shall go into the market and buy bonds at market rates. For some years the surplus revenue has been expended in canceling these obligations. The last of the 3½ per cents, however, were called in in July, and now the Government, in the course of paying its debts, has reached the 3 per cents. When the 121st call was issued, 5 per cent. bonds continued at 3½ per cent. to the amount of about $32,000,000 were outstanding, and already bonds under this call amounting to nearly $20,000,000 have been presented and redeemed. This class of bonds having been disposed of, the Government was forced to call, on the 19th inst., for $15,000,000 of the new 3 per cents, and it is said that the estimate will allow the redemption of $45,000,000 more of this loan before the end of the current fiscal year.

After all the 3 per cent. bonds shall have been redeemed there will be no other bonds which the Government can call until 1891. Let us see how many 3 per cents there are. The amount outstanding on August 31 was only $305,529,000. The surplus last year was about $133,000,000, and it may exceed $100,000,000 this year, so that, if the surplus shall not be reduced by legislation, the 3 per cents will be wiped out in about three years. There will follow a period of five years in which the annual surplus must accumulate in the Treasury, unless the Government shall decide to buy 4 per cent. and 4½ per cent. bonds at the ruling premium in the market. The amount that can be redeemed in 1891 will be only $250,000,000, and the accumulated surplus may then greatly exceed that sum, but not until 1907, or 16 years later, will the 4 per cents, amounting to $737,610,550, become redeemable.

The difficulties that attend the reduction of the debt in the near future are not, however, fully shown by these facts. Comptroller Knox announced, in December last, that the National banks held as security for their circulation $220,000,000 of the bonds which the Government has now begun to call in and redeem. The retirement of the 3 per cents may affect the circulation, for in the place of the called bonds, the banks, if they want to retain their circulation, must deposit in the Treasury the same amount, either in "lawful money" or other Government bonds. As the issue of circulating notes yields a very small profit, and as other bonds command a high premium, some banks may prefer to give up the circulation affected by the redemption of these called bonds, and in this way contract the currency. Whatever may be the effect upon the volume of National bank notes, it is unfortunate that the Government should be compelled to disturb the basis of the National banking system. The amount is too large. If it had been reduced to the amount required for the sinking fund—about $45,000,000—the outlook would now be more satisfactory.

In a comprehensive article recently written by Herr Wöhler, he enumerates the various kinds of injury and wear to which axles, tires and rails are subject, and remarks that under normal circumstances railway material is not forcibly torn, bent or broken, and that when such violent force is brought to bear on it, then the limit of human precaution has already been passed. On the other hand, he considers that scientific tests have to be arranged in view of those small and sometimes almost imperceptible movements which, by their frequent repetition, affect the durability of the material subjected to their influence. The test applied by the Imperial railways of Alsace-Lorraine, of which Herr Wöhler is manager, in the acceptance of axles, involves the sample bar being subjected to a load of 34.92 tons per square inch of the cross-section during ten minutes, without any further extension taking place during that time. If this test is withstood, the bar is subjected to a further weight until it is broken. After being broken, the cross-section of fracture must not exceed 65 per cent. of the original cross-section.

A recent issue of the Pittsburgh *Dispatch* contains a detailed account of the boiler explosion which occurred at the Sligo Mills, at Pittsburgh, lately. The building in which the explosion occurred was known as the Flange Works, and was filled with expensive machinery used for flanging boiler and flue heads. It was one story in hight and constructed of heavy timbers covered with sheet iron. Adjoining the lower side was a large two story brick structure, 25 x 60 feet used as a blacksmith shop, machine shop and carpenter shop. The boiler which exploded was 36 feet long and 46 inches in diameter, and steam was generated from the furnace in the flange shop. The engine had been stopped for the dinner hour and had been in operation only a few moments when the explosion occurred. The fireman and one other workman were killed instantly, while of the 16 persons who were injured three died within a short time after the accident. No particulars are yet at hand as to the probable cause of the explosion.

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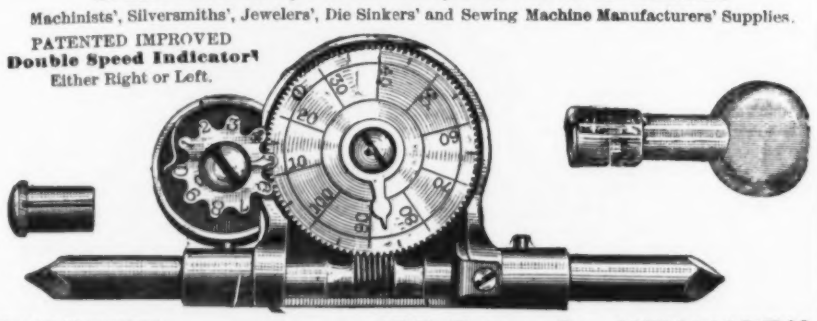

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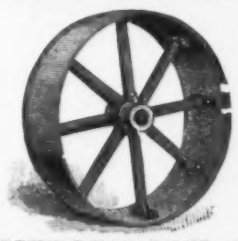

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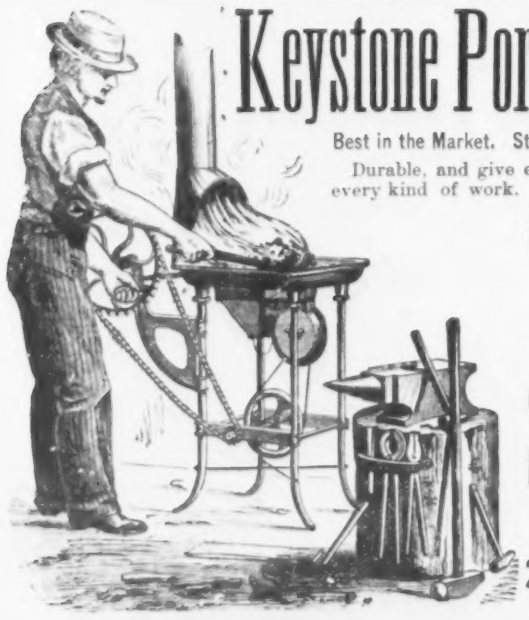

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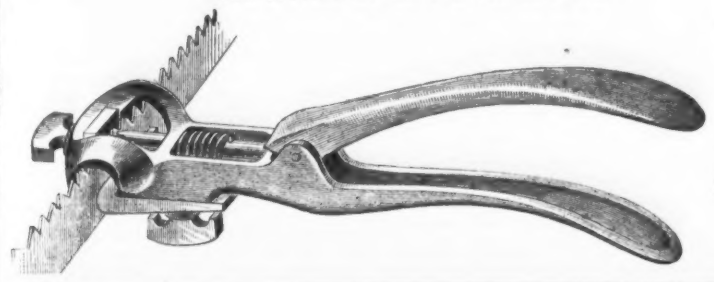

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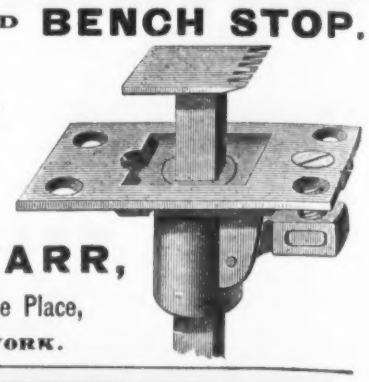

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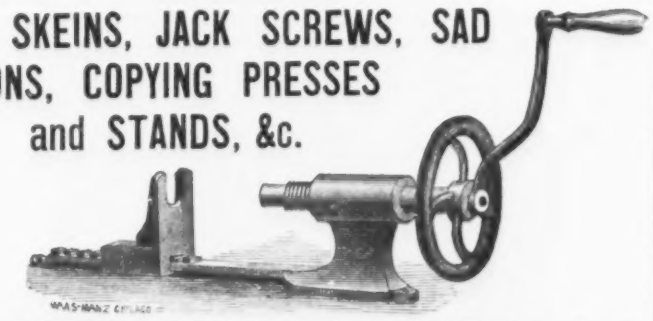

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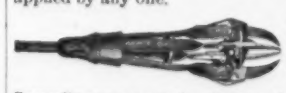

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The Zinc Industry of the United States.*

BY C. KIRCHHOFF, JR.

The development and the present position of spelter statistically and commercially are, more than that of any other metal, enveloped in a mystery which the reticence of many of the leading producers has created. As the industry possesses no literature, and no well-organized effort has ever been made to present the conditions under which it labors in different sections of the country, the first attempts in that direction are met by an indifference which must be pleaded as the cause of the incompleteness of the present review. Though cordial support by some of the gentlemen identified with the industry is acknowledged, even bare figures of production have been withheld by others, so that estimates, indirectly obtained, had to be substituted for official figures in some cases.

PRODUCTION OF SPELTER IN THE UNITED STATES.

The records of the production of spelter and zinc in the United States are very incomplete. The following figures are the only ones worthy of consideration which are available :

	Net tons.		Net tons.
1873	7,343	1882	33 765
1875	15,833	First six months of	
1880 (census)	23,239	1883, estimated	18,000

The zinc statistics are sometimes stated in pounds. For 1882 the corresponding figures would be 67,530,000 pounds; and for the first half of 1883, 36,000,000 pounds.

THE CAPACITY OF THE WESTERN WORKS.

During the past year the capacity of the works of the West has grown very rapidly, both by the building of new plants and by the enlargement and alteration of old establishments. The following table gives an approximate estimate of the annual capacity of the Western zinc works :

	Tons of zinc per annum.	
Illinois.		
Excelsior Concentrating and Smelting Works, Collinsville (3 Belgian furnaces)	800	
Illinois Zinc Company, Peru (3 gas, 10 Belgian furnaces)	7,200	
Mathiessen & Hegeler Zinc Company, La Salle (4 double gas furnaces)	12,500	
		20,500
†Missouri Zinc Company, Carondelet (14 Belgian furnaces)	8,000	
Glendale Zinc Company, Carondelet (3 Belgian furnaces)	3,000	
†Carondelet Zinc Company, Carondelet (4 Belgian furnaces)	1,000	
*Southwestern Lead and Zinc Company, Rich Hill (1 Belgian furnace, 1 Siemens furnace)	2,250	
*West Joplin Lead and Zinc Company, Joplin (6 Belgian furnaces)	2,250	
		12,500
Kansas.		
J. H. C. Gross, Weir City (8 Belgian furnaces)	3,500	
R. Lanyon & Co., Pittsburgh (8 Belgian furnaces)	3,500	
S. H. Lanyon & Bro., Pittsburgh (4 Belgian furnaces)	1,500	
*M. & J. Lanyon, Pittsburgh (2 Belgian furnaces)	750	
*Granby Manufacturing and Smelting Company, Pittsburgh (1 Siemens furnace)	1,250	
		10,500
Arkansas.		
†American Zinc Company, White River (4 Belgian furnaces)	1,000	
Total capacity	44,500	

This represents the capacity of all the works built. Some of them—those marked †—have not been running for some time; others are, and have been, running at one-half or three-quarter capacity at times, and those to which an asterisk is affixed have either been only recently completed or are still in course of construction. The works capable of working under fairly favorable conditions of trade have a capacity of fully 40,000 tons, and can therefore meet the demand.

OUTPUT OF THE WESTERN ZINC WORKS IN 1881.

According to an estimate made by good authority, the product in 1881 of the Western works then running was about 24,000 tons, distributed as follows ;

	Net tons.
Illinois	16,250
Kansas	5,000
Missouri	2,750
Total	24,000

PRODUCTION OF ZINC IN THE UNITED STATES IN 1882, BY STATES.

For the year ending August 31, 1882, a committee of producers estimated the output at 26,425 tons. Direct returns and estimates place the make of 1882 as follows :

	Net tons.
Illinois	18,201
Kansas	7,366
Missouri	2,500
Eastern States	5,698
Total	33,765

A considerable proportion of this metal is sold as sheet zinc, the quantity having largely increased in 1882. One works, that of the Mineral Point Zinc Company, Wisconsin, makes only oxide.

A question which is seriously threatening the prosperity of the Western makers of spelter, and makes it nearly impossible for all of them to work to full capacity, is the inadequacy of the supply of ore. Southwestern Missouri and Southeastern Kansas, the principal source, are capable of furnishing approximately 60,000 tons per annum. It is estimated that the requirements of the furnaces, if running fairly up to capacity, are about 100,000 tons annually. The result is a sharp competition for ores, which forces the less favorably located works into idleness, and runs the cost of production to figures making imports possible. During the past year a subsidiary industry, that of manufacturing sulphuric acid from the sulphurous acid generated in roasting blende, has been started by one large producer. As yet this branch is in its infancy, and does not seem capable for the present of a very great expansion or a general introduction, in view of the limited local market for the acid. There is reason to believe, however, that in time it may afford an important relief in reducing the cost of manufacture. For the present it has the advantage of reducing the nuisance of noxious fumes, against which in time public opinion might declare itself.

In addition to the supply from domestic sources, varying quantities of metal and of manufactures have been imported, chiefly from Germany and Belgium. During the period from 1873 to 1880, when the home industry trebled its output, this movement lost much of its force; while, on the other hand, since 1877 considerable quantities of high-grade spelter were exported. This continued until a heavy demand, outstripping home consumption, again brought our markets into a position favorable for imports. Meanwhile, home manufacturers had begun also to make sheet zinc on a more extended scale, and had succeeded in crowding back foreign competitors. The speculative excitement of the "boom" period again opened the gates, and this country was made the outlet for a heavy quantity of metal. A temporary reaction stopped the influx, but in 1882 the imports assumed dimensions not reached for more than a decade, and led to an overstocking of the market which weighed heavily upon it, carrying prices lower than those of lead—an unprecedented position for spelter. The great expansion of the demand, which made so sudden an increase in the supply possible without causing more disastrous consequences than it in reality led to, must be chiefly attributed to the great increase in amounts called for by galvanizers. The expansion of the wire industry, notably the barb wire for fencing purposes, created a demand which our works could not meet so suddenly. As illustrating the quantity of metal used for protecting barb wire alone, it may be mentioned that one manufactory alone consumes upward of 3000 tons of spelter per annum for that purpose. The fact that some of the heaviest manufacturers using spelter for galvanizing are near the seaboard, thus handicapping Western producers to the extent of the freight, did much toward making the invasion of foreign spelter more easily possible. During the calendar year 1882, 12,826 net tons of spelter were imported; but, since, the movement has nearly ceased, and home producers again have full control of the market. It is alleged, though there are no facts to prove the statement, that in times of depression abroad foreign makers continue to divert a surplus to other markets, this country being among the favorites. It is certainly strange that when Continental producers form "syndicates" to uphold prices, they do not order any restriction, to put the market in a position, so far as the supply is concerned, to enforce their higher demands. Experience in this country has amply proved that without such a restriction combinations among producers are doomed to be failures.

IMOPRTS AND EXPORTS.

The following tables show fully the imports and exports of spelter, sheet zinc, ores and oxide. The small quantity of ore shipped abroad comes exclusively from the New Jersey mines, being used at a Belgian works to manufacture zinc white by the Wetherill process :

Zinc, Spelter or Tutenegue Imported into the United States during the Fiscal Years Specified (specie values)—Dutiable.

Years.	Blocks or pigs.		Sheets.	
	Quantity.	Value.	Quantity.	Value.
	lbs.		lbs.	
1872	12,683,411	$565,739	14,280,107	$820,879
1873	6,336,736	329,022	9,453,072	621,776
1874	2,254,802	125,630	4,431,733	329,214
1875	2,087,571	109,912	7,238,894	445,766
1876	505,798	27,354	4,731,722	301,026
1877	1,273,301	64,956	1,256,387	77,713
1878	1,131,859	59,001	1,247,357	69,582
1879	1,390,617	52,182	1,177,080	50,312
1880	8,514,826	393,334	5,101,902	262,056
1881	1,813,615	73,321	2,356,619	107,207
1882	18,427,309	739,319	4,264,456	195,687
Cal. year, '82	25,651,567	1,024,324	4,668,501	215,793

Zinc Ore, Oxide, Plates, Sheets, Pigs or Bars Exported from the United States During the Fiscal Years Specified (mixed gold and currency values).

Years.	Of Foreign Production.			
	Blocks or pigs.		Sheets.	
	Quantity.	Value.	Quantity.	Value.
	lbs.		lbs.	
1872			20,514	$1,068
1873			201,612	14,834
1874	1,100	$75	58,815	4,093
1875			31,879	2,326
1876			31,018	1,958
1877			12,477	849
1878	2,753	195		
1879			7,038	416
1880			48,350	2,566
1881			58,055	3,287
1882			18,829	876
Calendar year 1882			11,335	583

Years.	Of Domestic Production.			
	Ore or oxide.		Plates, sheets, pigs or bars.	
	Quantity.	Value.	Quantity.	Value.
	cwts.		lbs.	
1872	3,686	$20,880	62,910	$5,720
1873	234	2,304	71,053	4,551
1874	2,550	20,037	43,466	3,622
1875	3,083	20,659	38,090	4,245
1876	10,178	66,259	134,542	11,651
1877	6,428	34,466	1,419,922	115,722
1878	16,050	81,811	2,545,320	215,580
1879	10,660	46,599	2,117,942	170,654
1880	13,024	42,046	1,568,312	119,264
1881	11,390	46,405	1,491,780	132,808
1882	10,904	11,736	1,489,552	124,638
Calendar year 1882	5,817	14,477	1,159,949	98,008

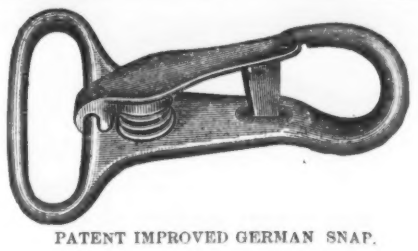
REVIEW OF THE SPELTER MARKET.

There are inherent in the nature of the industry in this country many reasons which make a systematic and general review a task of much difficulty. The conditions affecting one zinc-producing section differ so widely from those of another that they appear almost as independent of one another as though different metals were the product. In the East the splendid deposits of New Jersey, Pennsylvania and Virginia furnish an abundance of ore yielding a metal

* From advance sheets of the Annual Report of the Division of Mineral Statistics and Technology, United States Geological Survey, Albert Williams, Jr., Chief of Department.

THE ATTENTION OF THE TRADE IS INVITED TO THE SUPERIOR

HORSE AND CATTLE FASTENINGS



PATENT IMPROVED GERMAN SNAP.

These goods embrace a complete line of Halters and Ties, both in Hemp and Jute, made up with entirely new and original patented fixtures, and presenting such marked advantages over all other goods in the market intended for like use as to command immediate and general appreciation. These advantages are (see cut):

First.—The Cross Bolt Snap is the only Spiral-Spring Snap in the market that is impervious to water and dirt.

Second.—The Corrugated Split Clamp attached to the snap affords a perfectly safe connection with the rope that will not chafe through by use, and which obviates the necessity of the clumsy, double-thick splice heretofore employed.

Third.—The Adjustable Buckle into which the snap engages, and through the openings in which the lead of the rope is passed, affords a more convenient and secure adjustment of the loop than any similar device in use.

MANUFACTURED BY

THE UNION HARDWARE MANUFACTURING COMPANY,

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THE UNION HARDWARE MFG. CO. also manufacture a complete line of Cross Bolt Harness Snaps, Double Snaps for Chain Connections, Harness Chain Goods, Hitching Chains, Patent Improved German Snaps, &c.

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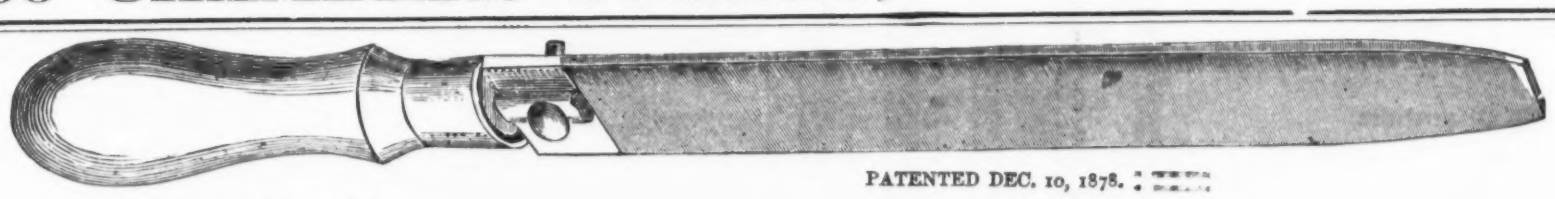


PATENTED SEPT. 24, 1878.

PATENTED DEC. 10, 1878.

MILLSPAUGH'S PAT. FILE AND HANDLE.

Little or no explanation will be necessary for the Mechanic to understand the manner of operating this File and Handle. The File has a hole in Tang end of same, a Yoke terminating in a thread operating in Nut at lower end of Handle. It will be readily seen by passing the Rivet or Pin through the top of Yoke and File; then, by turning the Handle, the Nut in same, acting on thread, will draw the File down to a shoulder, and will hold it firm, and thereby obviate all possibility of accident so common to the old-fashioned Handle. Again, one of these Handles will last for years unless carelessly broken, and the Mechanic will always have a Handle to fit firmly to the File. This handle has been pronounced by the leading mechanics to be the best thing of its kind ever made. We should prefer orders through the wholesale houses, but, if not convenient, order direct from factory.

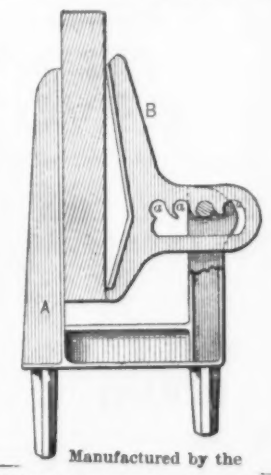
MANUFACTURED EXCLUSIVELY BY

NEW AMERICAN FILE COMPANY, PAWTUCKET, R. I., U. S. A.

Pat. in the U. S and Cnnada, Oct. 10, 1882.

CRISPIN'S ADJUSTABLE VISE.

Made from Best Malleable Iron.



Especially Useful for Fitting Doors.

Manufactured by the

RENO BENCH VISE COMPANY, Detroit, Mich.

A Portable Vise for use by Woodworking Mechanics. Self-Adjusting Jaw, Clamping any Thickness from ¼ in. to 2¾ in. For use in New Buildings or out of doors holding work while Sawing, Boring, Mitering or Planing. Best Saw Clamp in use. Price, 75 cents each. Send for Descriptive Circular. Liberal Discount to the Trade.

CHAS. O. LECOUNT & CO., New York.
G. W. VAN TINE & SON, Philadelphia.

GENERAL AGENTS.

DILDINE'S PATENT

PATENTED NOV 26 1878.

The only adjustable Wire Cloth Sieve made. It will take out good seed from the refuse of windmills that cannot be cleaned by any other process. Can be adjusted to many different size and shaped meshes. No. 1 Sieve will separate Plantain, Daisy, Buckhorn, Wild Carrot, &c., from Clover Seed; Red Top and Plantain from Timothy, and Timothy from Clover Seed. No. 2 will separate Rye, Cheat and Cockle from Wheat. No. 3 grades Peas, Beans and Corn. Indorsed by Hiram Sibley & Co., D. M. Ferry & Co., D. Landreth & Sons, Plant Seed Co., Henry A. Dreer, J. M. McCullough's Sons, B. K. Bliss & Sons, J. L. Breck & Sons, U. S Agricultural Dep't, Washington, D. C.

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THE FRED. J. MEYERS MANUFACTURING CO.,

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Manufacturers of

WIRE GOODS OF ALL KINDS,

Wrought-iron Fencing, Cresting and Hardware Specialties.

Send for Illustrated Catalogue of 1883.

Window Guard.

Sand Screen.

Sand and Grain Riddle.

Wire Counter Railing.

Mocking Bird Cage

No. 1 Carries 7 feet earth.
No. 2 Carries 5 feet earth.
No. 3 Carries 3½ feet earth.

PATENTED December 27th.

The York Pat. Steel Scraper

The Lightest and Strongest Scraper made. The body is made of one single piece of steel. *The Handles are fastened inside of fold, and free from all obstructions.* The body, bail and runners are all made of steel. Especially suited for contractors. Send for circulars. Manufactured by

THE YORK MFG. CO. Limited Portsmouth, Ohio.

BRONZE AMERICAN BRONZE WORKS. BEARINGS.

Bronze and Brass Bearings and Ornamental Castings.
Car and Locomotive Work a Specialty.

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Springs, Tools & Cutlery.

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Tempered Springs of all kinds.

of exceptional purity, finding a market readily. In the West—in Illinois, Missouri, Kansas and Wisconsin—there is a constant struggle between the mine owners and the smelters, and the competition for the raw material frequently carries prices for it to a point where profits are impossible. The markets for the lower grades of metal there made are subject to fluctuations, to sudden expansion and contraction, and are constantly threatened by foreign competitors.

The Southern States possess very important deposits of zinc ores, but until now the production of the metal there has been limited, though considerable quantities of ore have been shipped North, notably to the Mercer Zinc Company, at Trenton, N. J., where it is used for the manufacture of oxide. There are now under construction two zinc works near Knoxville, Tenn.—the East Tennessee Valley Zinc Company and the Edes, Mixter & Herald Zinc Company. There is a movement on foot also to build another works in Virginia. With improved railroad facilities for the carriage of ore and refractory material, with cheaper coal and very large supplies of ore at some points, there is a good prospect for a rapidly growing industry, especially as the quality of the spelter made is very high.

The bulk of the spelter made in the Eastern States finds its market directly through the dealings of the producers with the consumers, who are willing for their special purposes to pay a very much higher price for the pure metal. We shall, therefore, in the following brief summary refer almost exclusively to the fluctuations in the demand for the ordinary Western domestic spelter and its chief competitor, the Silesian and Belgian spelter, which has at times sold in large quantities and almost always places a limit to a rise in values beyond a given point. A considerable quantity of these grades does not reach the open market, so that the records of current transactions are often meager:

1875.—Higher prices in Europe allowed home producers to carry the market to a better figure, though the general apathy in business and the feeling among consumers that prices were unduly high made the market exceedingly quiet during the year. In the spring an association was formed among producers with a view to maintaining and controlling values. This association of Western makers began by fixing the price at 7 cents, and raised it in May to 7¼ cents, currency, but finding the metal moving off sluggishly, went down to 7.15 cents in June, returning, however, to 7.35 cents in July. It became apparent that some producers could not resist the temptation to force sales by concessions, and the combination rate was reduced to 7¼ cents in August. Even then there seemed to be little difficulty in getting supplies at lower figures. Still, the price of 7¼ cents was reaffirmed in spite of the sluggishness of the market, and for November was raised even to 7.4 cents. All efforts to keep "outside lots" from drifting into the market proved ineffective, and values continued unsettled till the close of the year. The "combination rates" are in parentheses:

Price of Spelter in 1875.

Months.	Highest. Cts. per lb.	Lowest. Cts. per lb.
January	6.75	6.37
Feb uary	6.67	6.25
March	6 50	6.20
April	(7.00)	6.50
May	(7.25)	7.15
June	(7.25)	7.15
July	(7.35)	7.25
August	(7.25)	7.10
September	(7.25)	7.10
October	(7.40)	7.15
November	(7.40)	7 15
December	(7.40)	7.15

1876.—The year opened with a firmer market, and the association succeeded, by forcing up the nominal rate successively to 7.6 and 7.75 cents, in carrying the market higher, underselling going on steadily. In March, consumers, in anticipation of a further advance, bought more freely, but no steps in that direction were taken until the beginning of April, when 8 cents was announced as the official price. Meanwhile stock was accumulating at the seaboard, and considerable eagerness being displayed by second hands to realize, made the breach between the nominal and actual prices greater and greater. The "combination" gradually went to pieces. In June its announcements had lost all practical interest, and with this artificial support withdrawn from it, the metal gradually sank during the rest of the year by its own weight, the production being heavily in excess of the requirements. During the year transactions were based upon the following quotations:

Price of Spelter in 1876.

Months.	Highest. Cts. per lb.	Lowest. Cts. per lb.
January	(7.60)	7.40
February	(7 75)	7.50
March	(7.75)	6.62
April	(8.00)	7 60
May	(8.00)	7.75
June	(8.00)	7.25
July	7.25	7.12
August	7.25	7.00
September	7.12	6.80
October	6.75	6 62
November	6.62	6.37
December	6.50	6.37

1877.—Continued dullness and a partial decline in prices led to a curtailment of the production, and in February to the first export sale of 200 tons of high-grade spelter at 8¾ cents currency. Consumers, however, maintained an unshaken attitude of reserve, unaffected by speculative attempts to rally the market, which drooped steadily, being only temporarily relieved. The foreign metal was entirely forced out of the market, in spite of the fact that values abroad were low. During the year values moved within the following monthly range:

Price of Spelter in 1877.

Months.	Highest. Cts. per lb.	Lowest. Cts. per lb
January	6.50	6.25
February	6.62	6.50
March	6.50	6.37
April	6.37	6.25
May	6.25	6.00
June	6.12	5.87
July	5.87	5.62
August	5.90	5.80
September	5.87	5.75
October	5.90	5.70
November	5.87	5.62
December	5.75	5.50

1878.—A heavy production and a light demand, together with low offerings of foreign metal pressed upon the market, and a convention of producers at St. Louis, held in March, were unable to apply any remedy for existing evils. Toward the middle of the year there was a better feeling due principally to an upward movement abroad, but toward the end of the year continued dullness carried the price down to a very low point, heavy exports of high-grade metal being meantime made to Europe. The range of prices of spelter was as follows during the year:

Price of Spelter in 1878.

Months.	Highest. Cts. per lb.	Lowest. Cts. per lb.
January	5.75	5.50
February	5.62	5.25
March	5.62	5.25
April	5.25	5.00
May	5.00	4.62
June	4.62	4.25
July	4.75	4.50
August	4.87	4.50
September	4.87	4.75
October	4.62	4.50
November	4.75	4.50
December	4.37	4.25

1879.—As in all other branches of the metal trade, the year 1879 opened with a very discouraging outlook in spelter. Prices continued to droop in spite of an effort made early in February to revive the old association of producers. The same evils which wrecked the earlier attempt were at once manifested, and the metal was soon allowed to drift its own way untrammeled, until in July a better feeling began to develop. In August a decided upward tendency carried up the market here and in Europe, where an agreement was arranged among the Belgian and the Rhenish and other German producers. In September and the succeeding months spelter was caught by the speculative tide which bore up all metals so very rapidly, and values were quickly advanced to figures which again rendered imports possible. The closing months of the year were exciting in all branches of the iron, steel and other metal trades, and lifted spelter out of the mire into which it was sinking. The price of spelter varied monthly, as follows:

Price of Spelter in 1879.

Months.	Highest. Cts. per lb.	Lowest. Cts. per lb.
January	4 50	4.25
February	4.62	4.40
March	4.62	4.37
April	4.75	4.25
May	4.50	4.25
June	4.37	4.12
July	4 75	4.37
August	5.62	4.80
September	6 00	5.62
October	6.37	6.00
November	6.25	5.87
December	6.25	6.00

1880.—The market temporarily recovered from the slight reaction of the first weeks of the year, and held its own well for months, until an increasing pressure of foreign metal caused prices to weaken in May and June, and for the balance of the year there were alternating periods of dullness and slight reactions, the net result being a further decline. Values moved within the following range:

Price of Spelter in 1880.

Months	Highest. Cts. per lb.	Lowest. Cts. per lb.
January	6.50	5.87
February	6.75	6.37
March	6.75	6.50
April	6.50	6.12
May	6.00	5.62
June	5 50	5.12
July	5.00	4.87
August	5.25	4.87
September	5.12	4 75
October	5.00	4.87
November	4.90	4.65
December	4.75	4.05

1881.—The year opened quietly. A slight improvement which developed toward the middle of January was lost, and a period of dullness followed, with a steady declining tendency which caused the suspension of work in some of the Carondelet establishments. In June this had grown to utter stagnation, but toward the end of July a better demand sprang up, and inquiries increasing in volume and growing in urgency caused greater firmness and warranted a gradual rise in prices, which only the beginning of sales of foreign spelter checked. Spot stocks had been almost exhausted, and importations began to assume unheard-of dimensions. The fluctuations in the prices during the year were as follows:

Prices of Spelter in 1881.

Months.	Highest. Cts. per lb.	Lowest. Cts. per lb.
January	6¼	4⅞
February	5¾	5⅛
March	5	4⅞
April	5⅛	4¾
May	5	4⅞
June	5	4¾
July	5	4¾
August	5⅛	5
September	5⅜	5¼
October	5⅞	5¼
November	5⅞	5½
December	6	5½

1882.—The scarcity of spelter continued during the first weeks of January, and consumers bought quite heavily for delivery over the first three months of the year, the metal placed being almost exclusively European. The heavy offerings of Silesian and Belgian spelters, many of the brands being unknown in our markets and of inferior grades, made concessions necessary, especially as the majority of consumers were well supplied. The market was dull, therefore, during February and March, and showed a weakening tendency. In March there were repeatedly cases of heavy cutting, and toward the beginning of April Western domestic metal, which had until then been entirely absorbed by the local trade, began to appear in the Eastern markets. Simultaneously came the news of the forming of a "syndicate" among European producers, which had the effect of making consumers here cautious. In May and June, under large sales of Silesian spelter at lower figures and very heavy offerings of foreign metal, the market began to decline. Stocks of foreign spelter were known to be very heavy, while, on the other hand, the demand on the part of galvanizers was dropping off. The market in July was heavy and dull, and the pressure to sell led to a demoralized condition of affairs, the struggle of Western makers to regain a foothold complicating matters. Still, the demand continued good, and low prices induced consumers to make heavy contracts in August. This struggle dragged along in September and November, buyers beginning to be frightened and holding off persistently. It was not until December, however, that the domestic metal had succeeded in crowding back foreign spelter, values having meanwhile fallen very considerably. During the closing months of the year the output in the West had grown materially by the completion of a number of new works. Values fluctuated within the following range during the year:

Price of Spelter in 1882.

Months.	Highest. Cts. per lb.	Lowest. Cts. per lb.
January	6	5¾
Feoruary	5¾	5⅝
March	5⅝	5⅜
April	5⅛	5¼
May	5⅜	5¼
June	5⅜	5¼
July	5⅜	5⅛
August	5½	5⅛
September	5⅜	5⅛
October	5⅜	5⅛
November	5⅛	4⅞
December	4⅞	4½

1883.—The leading feature of the markets during the first half of the present year has been the heavy falling off in the demand, which caused an early cessation of the importations of foreign spelter, and again gave complete control of the market to home producers. The trade showed a slight recovery during the spring, but has since relapsed into great dullness. The output is more than ample for the requirements of a restricted market. Quotations were as follows:

Price of Spelter in the First Six Months of 1883.

Months.	Highest. Cts. per lb.	Lowest. Cts per lb.
January	4⅝	4½
February	4⅝	4½
March	4¾	4⅝
April	4¾	4½
May	4¾	4½
June	4⅞	4⅜

THE PRINCIPAL FOREIGN PRODUCERS.

Our home producers are so frequently and so seriously affected by the movements of their foreign competitors that a brief review of recent development in the few great zinc manufacturing centers of Europe will aid in gauging their strength:

Germany.—The greatest producer of spelter and the most vigorous competitor of our Western manufacturers, notably in the markets of the seaboard as far inland as Pittsburgh, is Germany. The two great producing districts are Silesia and the Rheni. h Provinces and Westphalia, the product being divided as follows:

Production of Spelter in Germany.

Years.	Silesia. Metric tons.	Rhenish Provinces. Metric tons.	Total. Metric tons.
1876	4 ,377	33,664	83,041
1877	57,423	37,320	94,743
18-8	59,619	35,518	95,137
1879	63,476	33,008	96,484
1880	65,443	33,968	99 405
1881	67,547	37,798	105,345
1882	69,448	45,354	114,802

Silesia occupies its commanding position, in spite of the low grade of its ores and the remoteness from the seaboard, because its raw materials, coal and ore, are cheap, and because mines and smelting works are in the hands of the same owners. Until recently, too, the lead ores associated with the calamine paid for a part of the cost of mining (in 1879 over 14,000 tons of lead ore were raised from zinc mines), but since the ores have turned more to blende in greater depth, the lead is more difficult to separate, and, moreover, is poorer in silver. In 1879, 1880 and 1881 the average grade of the ore was only 12.7, 12.3 and 13.15 per cent., respectively; but the consumption of fuel, which was 2.7 pounds of coal per pound of ore in 1860, has been brought down to 1.53 pounds in 1880 and 1.37 pounds in 1881, chiefly by the introduction of gas-firing and Siemens furnaces, the fuel being, besides, largely cheap slack, instead of more expensive special sizes. Spirek gives the following figures of the cost of production in four Silesian works in 1880, which well illustrate how great in proportion to the other expenditures is the cost of the ore. It may be stated that the selling price has since declined to about 300 marks at Breslau:

Cost, in Marks, of Producing Spelter in the Silesian Works.

	1.	2.	3	4	A'ge.
Cost of ore at w'ks	203.8	209.0	200.0	195.0	202.0
Cost of fuel	82.0	60.4	40.0	38.0	52.6
Other expenses	80.0	67.7	67.8	65.0	70.1
Total cost	365.8	337.1	307.8	298.0	324.7
Selling price	338.0	338.0	338.0	338.0	338.0
Loss	27.8				
Profit		0.9	30 2	40.0	13.3

The Rhenish Provinces and Westphalia treat chiefly blende from home mines and calamine obtained from Spain, Sardinia and Greece, a source of supply which, however, threatens to diminish rather than increase. The following data from the official returns of the Prussian Department of Mines well illustrate the source of supplies and the character of the ores:

Zinc Ores Mined in Prussia.

	1879. Tons.	1880. Tons.	1881. Tons.
Silesia:			
Calamine	435.423	457,030	501,517
Blende	65,340	218,386	
Renish Provinces, &c.:			
Calamine (German)	9,091	73 792	73,714
Blende (Ge man)	79,452		
Imported		16.595	17,134

It should be noted that the imported ores are usually very rich, so that they take a higher rank as source of metal than the tonnage figures would indicate.

Belgium.—Belgium has always been one of the greatest zinc mining and smelting countries of the world, the Liège district, with the works of the Vieille Montague Company, being the scene of the greatest activity. The mines of the country have been incapable of supplying the growing quantities of ore required, and Sweden, Norway, Spain, Sardinia and Greece have been laid under contribution. According to report on the Liège district for the year 1881, the great center of the zinc industry of Belgium, 11 works treated 19,200 tons of Belgian ores and 145,000 tons of foreign ores, of which 40,000 tons came from Greece, 39,080 tons from Italy, 35,000 tons from Spain, 13,000 tons from Sweden, 13,000 tons from Germany and 3800 tons from France, the product reaching 69,800 tons of spelter, with a consumption of 375,000 tons of coal.

Great Britain.—Though the quantity of spelter produced in England has largely increased, that country has become more and more dependent upon producers in other countries for its supplies of crude and manufactured zinc, as the following tables show:

Production of Zinc in Great Britain.

	Gross tons.		Gross tons.
1860	4.357	1875	6,713
1870	3,936	1881	14,947

Imports of Zinc into Great Britain.

Years.	Crude zinc. Tons.	Zinc manufactures. Tons
1860	24.416	.....
1865	32,191	.....
1870	31,103	.....
1875	37,870	.....
1876	29,466	14,719
1877	35,094	16,102
1878	32,750	16,207
1879	34,180	15,474
1880	33,409	16,648
1881	46,198	19,302

Other Foreign Countries.—The exports of calamine from Greece, according to the latest statistics, were 40,278 tons in 1881, of which 28,045 net tons went to Belgium.

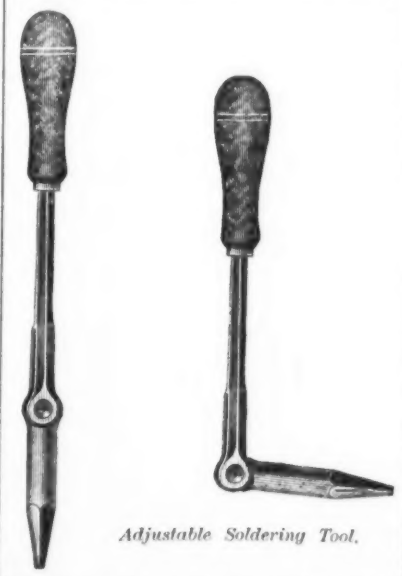
Spain has of late years become a producer of spelter, having made 4221 tons in 1880, and 7032 tons in 1881. The bulk of its shipments is, however, ore, the exports having been 36,115 tons in 1880, 30,604 tons in 1881, and 25,832 tons in 1882.

For the period of 1875 to 1879 the production and exports of zinc ores from Italy were 65,000 tons.

The quantities supplied to English, German, Belgian and French consumers from outside sources are, then, approximately 130,000 tons.

An Adjustable Soldering Tool.

The Covert Mfg. Company, West Troy, N. Y., are introducing a new and very useful tool in the form of an adjustable soldering bolt, which we think will be found adapted to a large range of work for which tools of the shape in general use are not quite fitted. The copper point is pivoted on the handle, rendering it easily and quickly adjustable to any angle. These coppers are detachable, and when worn out or a change



Adjustable Soldering Tool.

is necessary, they can be removed from the handle and another substituted. If the copper swings too freely by reason of wear or otherwise, it is easily remedied by turning up the pivot nut, and it is made to swing more easily by turning the nut back. In changing the position of the copper it is not necessary to loosen the nut, as the handle and copper are so constructed relatively that a proper pressure on the copper will work the desired change of position, it being immaterial how hot the copper may be. These tools have been carefully tested, and are found in practice a great convenience in the shop.

The Cost of Wrought-Iron Framing.

Mr. P. Barnes, in an article in an exchange, remarks that it is a fact quite worthy of note in connection with the use of wrought-iron bars and plates, in the more modern designs of roofs and other similar framed work in buildings, that the amount of what may be called blacksmith's work, or forged pieces, has steadily diminished in quantity and complexity until now there is very little of it left. This fact does not by any means indicate that the fitting or joining of the parts has been slighted or been done carelessly, but it is due to the constant study of those who plan such work to simplify the whole, so that the usual range of work called for may be reduced in cost to the lowest practicable limit, and also, an equally important thing, so that there may be the largest possible inducement for the use of such work in new directions.

This need of simplicity of construction and of reduced cost has led to the furnishing by many rolling mills of bars of a great variety of forms, so that in the use of them, even in a complicated piece of framing, the only hand labor that need be done is found to be the bending, or twisting, or flattening out of these bars, all of which can be done at a comparatively low heat, and by men of very moderate skill. The joining of such parts has come to be almost wholly a matter of the fitting of plain pins, turned for the more important work, and the driving of rivets, all of which involve care and skillful oversight, but no special skill on the part of the individual workmen themselves. For some of the tension rods and similar parts of iron frames there will probably always be some welding needed, as these members are usually made of the best iron, and hence, to save cost, must be kept as light in weight as possible. Hence, the need, in the ends of these parts, for joining them one to another, of a welded eye, so that the fullest strength shall be maintained for the size of the bar used, or, more correctly, so that the full strength shall be preserved throughout every part of it when made up into the finished form. In the forming and welding of these eyes, the smith's work is of the most elementary sort, the bending of the end back upon itself and the making of the simplest form of a scarf weld being the whole of it.

The great care which has thus been given to these details of design, both in the ideas involved in the combination of parts and in the putting of them into the forms of actual construction, has led to very large reductions in cost price of all such work, and hence to an expansion of the business of making wrought-iron framed work, which is nearly incredible, even to those who have been familiar with each step of this advance during its progress.

The British Pig-Iron Trade.

Referring to the proposed restriction of output of pig iron in Great Britain, and the general condition of the trade, the London *Iron Trade Exchange* submits some remarks which are well worth attention. Among other things, our contemporary says:

Another warning to pig-iron manufacturers has been issued by an anonymous writer, who in May last volunteered to advise the English ironmasters as to the conduct of their business. We are warned that "unless ironmasters have the common sense and business foresight to again agree to curtail the make of pig iron, by blowing out furnaces in Scotland and England, the whole trade will in a measure be ruined, the public will abstain from operating, the warrant brokers will have lost their occupation, &c." Now, we fail to see what loss it will be to those legitimately engaged in the iron trade if the public do abstain from "operating." A definition of modern business is "selling what you have not got to some one who does not want it," and this applies very largely to business in iron warrants. We are told that if the production of pig iron is curtailed at once, "the public will take an interest in the article," but we do not admit that their "interest" will be productive of any permanent good. The public have in the past taken a deep interest in Scotch pig iron, and they have left a memento of that interest in the enormous stock of pig iron in Messrs. Connal's stores at Glasgow—a stock which never could have accumulated except under the artificial stimulus of "public interest." We are told that a restrictive policy would give "confidence in buying," but past experience has not proved this to be the case. Confidence in buying creates a cheerful market, and when that confidence proceeds from increased demand, it is likely to be encouraged by the future course of the trade. On the other hand, when "confidence in buying" is caused by the fact that production is being restricted, and that the public is taking an "interest" in the market, it is misplaced confidence, and those who trust in it will surely be deceived.

The backbone of the iron and steel trades of this country at the present moment is a cheap and abundant supply of the raw material—pig iron. The total stock of iron in Cleveland is little more than a month's make, and is not more than sufficient to give that stability to prices which is so congenial to consumers and so distasteful to speculative brokers and their clients. In Scotland stocks are heavier—too heavy, in fact—but, as before stated, the public, and not the trade, is responsible for this. Granted that it is possible to effect a combination among the iron smelters of the Kingdom for a general reduction of the make, and we are assured it is not, we believe the demand for iron would fall off just in proportion as values rose, and perhaps in an increased ratio. No one can doubt but that our exports of pig iron would diminish, and in some directions cease altogether, while iron-absorbing industries at home—the foundries and forges of the Kingdom—would soon lose that hold which cheap pig iron has given them on the markets of the world. Such a combination as that proposed would, we doubt not, for a time galvanize the iron markets into feverish activity, but it would be surely followed by a depression of the most pronounced character. Any mode of cheapening our supplies of raw materials is of the utmost importance to the manufacturing interests of the country, while an effort to create for them artificial values would be an attempt to handicap our manufacturers in the markets of the world.

The European Harvest.

The statements of the great International Corn Market, at Vienna, upon the year's harvest, prepared from returns made by reliable correspondents all over the world, are, on the whole, less favorable than expected. The following is an abridged list of the estimated results of the yield in various countries of wheat, rye, barley and oats. A "good average" is represented by 100:

	Wheat, pr. ct.	Rye, pr. ct.	Barley, p. ct.	Oats, pr. ct.
Prussia	90	84	94	92
Saxony	80	75	85	84
Denmark	105	100	..	70
Austria	85	89	96	104
Hungary	100	86	92	72
Upper Italy	65	70	..	..
Central Italy	87.5	87.5	..	..
Southern Italy	80	..	..	..
Eastern Italy	105	..	..	..
France	85	85	100	100
Holland	100	90	95	90
United Kingdom	80	..	101	102.5
Northern Russia (except Courland)	95	90	..	..
Central Russia	70	67	70	78
Southern Russia	90	110	150	105
Egypt	120	..	100	..

In Southern Russia the yield of summer wheat is put down at 80. Bessarabia and Lesser Wallachia wheat is also estimated at 80. In Greater Wallachia it is put down at 100 for winter and 90 for summer wheat. The crop of the United States was estimated at 420,000,000 bushels. The crop of India was estimated at 310,410,000 bushels, of which there would be available for export 33,500,000 to 41,000,000 bushels. The report of the European crops showed that the harvests had been disappointing generally. Not only was the result below last year, but below the average for 10 years past. The quality was also poor. In seven small countries the harvest exceeded the average. These countries were Southern Germany, Denmark, Sweden and Norway, Holland, Great Wallachia, Servia and Egypt. The Hungarian crop was up to the average in quality, but 10 per cent. short in acreage. The Hungarian rye crop was 5,700,000 bushels below the average, barley 2,850,000 bushels below and oats 8,550,000 bushels below. In Austria rye was 8,550,000 bushels below the average, barley 1,420,000 bushels. Wheat in Austria alone was 5,700,000 bushels below the average.

It is announced that the exhibition which it was proposed to hold this year at Lisbon has been postponed to May 2, 1884. The building is very much behind, and it was found impossible to complete it before the heavy autumnal rains.

Coal and Coke for Iron Melting.

Mr. Thos. D. West, well known to our readers as a practical foundry manager who has made valuable contributions to the literature on this subject, writes as follows:

There having been recently so many encomiums upon the merits of coke for melting iron, and none for coal, it seems to me that some, through short acquaintance with coke, are a little too enthusiastic to show up one good fuel at the expense of another. I do not deny that coke is a good fuel to melt with, if its use is understood; neverthless, coal is also good, and in some ways superior, for which I would not like to see its use abandoned. Before I get through, I hope to show wherein the merits of each fuel lie, and to present a few ideas that may assist those wishing to change from coal to coke. The merits claimed for coke are as follows: First, that it will melt faster than coal; second, that it requires less blast pressure; third, that it is a cheaper fuel than coal, and, fourth, that it contains less impurities and will make softer castings. The first three are certainly true, but regarding the fourth I have doubts, and am afraid it would not stand a rigid test.

Either through design or lack of observation, there seem to be two important points in the use of coke and coal that have not been brought out. One is regarding the life and heat of the metal and the other the length of heats. The foundrymen in this section of the country have had experience with coke for a long time, and I have yet to hear any of them say that coke, on an average, is better than coal for making hot metal, for lengths of heats or for soft castings. To run long heats and have metal keep its life is a very important factor with many foundries, such, for instance, as those doing heavy work, where the first 5 or 10 tons melted have to stand in a ladle from one to two hours, waiting for another ladle to be filled. There is a notable feature—that of the life of liquid iron—that many shops may not notice, as with them the metal may be said to be no sooner out of the cupola than it is poured into the molds. I am a firm believer in melting iron as hot as possible, as I know it to be a fact that stronger castings can be made by so doing.

The length of heats has in my practice been increased by using coal with coke, and in this section many foundries mix coal with coke in order to do clean cupola work and produce hot iron. That a cupola will run longer with a mixture of Lehigh coal and coke is admitted by Cleveland foundrymen to be a fact. In order to make my subject plain, and to show ways of charging, the accompanying cuts are inserted. The cupolas, as shown, are charged for ordinary heats. To run at their full capacity, about 10 pounds more fuel should be added to each charge. To commence with, I will state that the description of the various modes of melting here given are not test heats got up to show how fast melting can be done, or to present the two-sided question of economy in fuel. The heats described are the average practical workings of a few common, plain, round cupolas in this city. The Cuyahoga, Viaduct, Eclipse and Globe Works have kindly allowed me to publish their ways of melting.

The Cuyahoga and Globe Works make heavy steam engine and machinery castings. The Eclipse Works do a large business in housework and general jobbing castings, while the Viaduct Works make a specialty of vapor oil stoves and light jobbing castings. These four specialties cover about all ordinary foundry practice, so that nearly all can apply one or the other to their own practice. The Cuyahoga and Globe Works each have two cupolas, and their smallest ones being of about the same size, I have chosen them to show their practice of using coke and coal. The Globe Works' cupola is charged with all coke; the Cuyahoga with coke and coal. The charges, as shown, are continued to the end of the cupola's capacity. The Globe Works' blast pressure is 5 ounces, obtained from a Sturtevant No. 8 fan; time of melting, when using all coke, 3 tons per hour. The Cuyahogo's blast pressure is 7 ounces, obtained from a Root rotary blower No. 5; time of melting, with coal and coke, 3 tons per hour.

The Eclipse Works' mode of charging, with all coke, for a heat of seven tons, is: 700 pounds of coke for the bed and 1200 pounds of iron for the first charge, the balance of iron charges being all 800 pounds; between the charges, 95 pounds of coke. The cupola is 35 inches inside diameter, having four round 5-inch tuyeres, about 18 inches from the sand-bed to center. The hight of charging doors, bottom to foundation plate, is 9 feet; blast pressure, 7 ounces, obtained from a No. 7 Sturtevant fan; time of melting, 6500 pounds per hour. The Viaduct Works' mode of charging, with coal and coke, for a heat of six tons, is: 738 pounds of coke and 400 pounds of coal for the bed; first charge of iron, 1800 pounds; the balance of iron charges, 1200 pounds; fuel between them, 123 pounds of coke and 25 pounds of coal. The cupola is 38 inches inside diameter, and has four oblong tuyeres of the dimensions shown, their hight from sand bottom being about 16 inches. The hight of charging-door from plate is 11 feet; blast pressure, 12 ounces, No. 5 Sturtevant fan; time of melting, 6500 pounds per hour. As a general thing, in the charging of this cupola there is not any fuel used between the last charges.

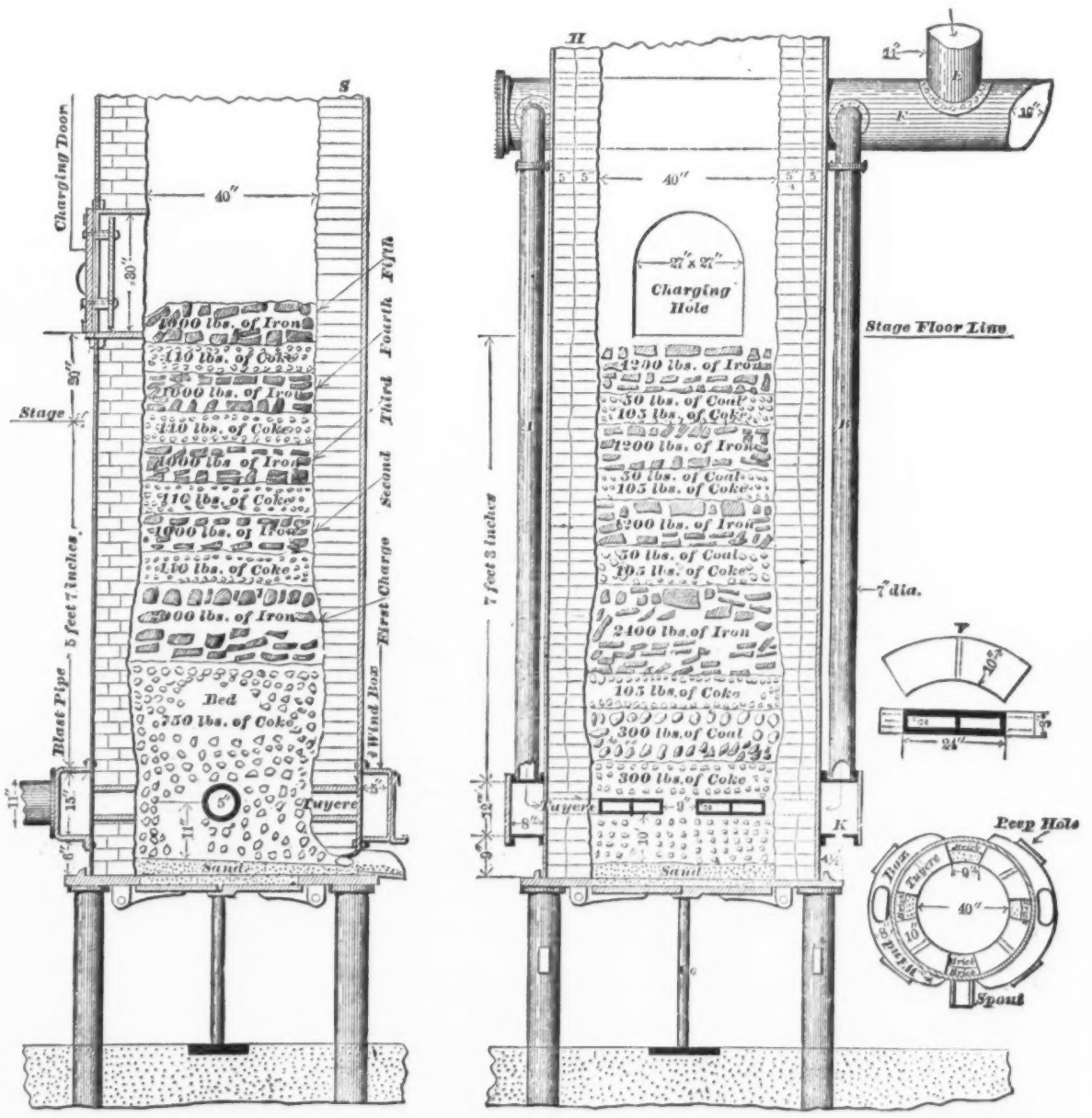
For a flux this firm and the Cuyahoga Works use fluor spar. I find it a good thing for cleanliness of metal and cupola. In using this flux, we shovel about 12 pounds on the top of each charge, with the exception of the first two or three charges. The cost of this flux is about $12 per ton, delivered. In melting with coke the fire does not require to be started as early, simply because coke does not require as long a time to kindle as coal. The idea of time for kindling should be to allow sufficient to have the fuel all on fire before iron is charged. Any longer than this is only a waste of fuel, and a detriment to successful melting. The draft and kinds of kindling used should govern the time of starting fires. The bed, when all coke, should be from 6 to 10 inches higher than when coal is used. The charges of iron should not average much over one-half the weight of the charges when coal is used; or, in plainer language, where a charge consists of 2400 pounds of iron with all coal, with all coke it should be about 1400 pounds. As successful melting with coke cannot be done with low tuyeres as with coal. As a general thing, coke melting requires tuyeres to be from 18 up to 30 inches above the bottom plate, or about one-third higher than for coal. I do not mean by this that coke melting cannot be done with low tuyres, but that with high uyeres longer heats and hotter iron will be obtained. My theory for this is based upon the proposition that a Lehigh coal fire has more of a body than a coke fire. The blast as it goes into a cupola will more readily cool off coke than coal, and this cooled body of fuel, if not attended to, gradually increases until it reaches nearly to the center, which results in scaffolding or bunging up the cupola. To assist in preventing such results the blast should occasionally be slackened, the tuyere peep-holes opened, and then with a bar the cooled body of coke and frozen droppings of metal should be driven in toward the center of the fire. This will cause the cooled body to be rekindled, the frozen droppings remelted, and give a clean, hot body of fuel for the cold blast to play upon.

My experience and observation of coal and coke has satisfied me that coke will create, as a rule, more slag than coal. I recall here a case where, all coke being the fuel, the tuyeres had to be raised in order to successfully melt the required amount of iron. The shop in which this occurred was the Cleveland Rolling Mill Company's foundry, Newburgh, Ohio. Working there at that time, I carefully noted the results of the change. The size of cupola was 44 inches inside diameter; charging-door, 8 feet 6 inches from the bottom plate. The tuyeres were originally about 20 inches high, and by the time 14 tons of iron were melted the bottom had generally to be dropped. This became a nuisance, as the shop would often be left with molds unpoured. The tuyeres were finally raised to 30 inches high and altered from a flat tuyere, similar to one shown in right-hand cut, to six 5-inch round tuyeres. With these changes the cupola would successfully melt 20 tons.

In melting for machines, or heavy casting, the iron is generally allowed to accumulate before tapping out. This accumulation causes the raising and lowering of fuel, thereby not leaving any body long at a time exposed to the cooling effects of the cold blast. The benefit of this cannot but be seen if connected with the reason for slackenining the blast and barring a cupola, as noted. A point that has much to do with ill success in changing from coke to coal is using too strong a blast. As a general thing, one-third less pressure at least should be used for coke than for coal. I know it is nice to see a cupola melt fast, but not so enchanting to have to reline it about every two months, which will often result from too strong a blast.

It is impossible to obtain good soft castings where a cupola is being cut to pieces with the blast. The cupola on the right ran for about one year almost daily without being relined, which will, I think, be acknowledged as a good showing. I do not credit it all to the merits of a mild blast. There is another feature that undoubtedly had much to do with it—that is, the daubing up of the cupola with fire-clay. I know that many object to the use of fire-clay on account of its expense. This is, I think, where they are in error. If the users of common clay would give fire-clay a trial for about six months, using it as daubing should be used, I think that, at the end of the trial, if the extra expense is balanced against bad castings through dull and dirty iron, slow melting, through accumulation of slag, time and labor lost in picking out cupolas, and the cost of fire-brick and clay in relining what should not be required to be relined for six months to come, the fire-clay would be found far the cheapest in the end.

The melting of iron is a subject I have written a great deal upon, and there are other points that might here be mentioned, but, as I decline to republish my views, I will close by saying that in both of our foundry cupolas we constantly use coal and Connellsville coke, as shown, and by proper attention to slagging (which, I am sorry to say, has to be done through the tapping-hole because of not having a good chance to place a regular slag hole), our cupolas will run for hours and then drop as clean as if they had only been in blast for one hour. The smallest cupola which is here shown has been kept in blast from 1 o'clock p. m., until 7.30 p. m., and then dropped clean. In fact, I have yet to see such a thing as scaffolding or cupola bunging. Such a commendable report I would like to see presented from the use of all coke in any similar common style and sized cupola.



Coal and Coke for Iron Melting.— Methods of Charging Cupola.

Bearing upon the question of long and short rails, it may be of interest to state that the first line opened in France—viz., that from Saint Etienne to Andrezieux—had rails only 3 feet 11 inches long and weighing 45 pounds. This was in 1828; but in 1832, on the line from Saint Etienne to Lyons, the rail had increased in length to about 14 feet 8 inches and weighed 132 pounds. Various increases were made up to 1855 in France, when the length reached 19 feet 6 inches. England came in with a rail measuring from 21 to 24 feet, with a weight of 110 pounds per 39 running inches. In Austria the Francis Joseph line far exceeded this length, but was one-eighth less in weight. The great objection to the lengthening of iron rails is that the rail exfoliates and is damaged at any point—in fact, the Southern of France Railway Company finds that only one-third of the rails are damaged at the ends. The greater length also involves more labor in the removal and replacement of rails. The use of cast steel changed the whole question, and now rails are turned out in Belgium and France 85 feet in length. The long rail adopts a curve more readily, owing to the absence of joints. Considering the dilation owing to changes of temperature, the maximum length of a rail in France is thought best to be about 49 feet 3 inches and weighing 110 pounds.

The Riverdale Disaster.

The question has been asked, and doubtless will be asked again, why we have not made further allusion to the explosion of the Riverdale's boilers in this harbor. We have been waiting until the evidence should be laid before the coroner's jury and something definite ascertained in regard to the boiler and the inspection, but the nature of the evidence has been so extraordinary that we have entirely lost interest in the whole matter. There is nothing to be learned in regard to the Riverdale disaster which will be of the slightest scientific value. We have also been asked the question what we think in regard to boiler inspection. This we can easily answer. We think that boiler inspection as practiced by the United States Government in these waters is the broadest kind of a farce, and the reason for this opinion will be found in the following testimony, which is reported to have been given before the the coroner's jury:

Mr. Starbuck asked Mr. Jas. H. Stephens, assistant inspector, "Is it not the duty of an inspector to see that all parts of a boiler are sound?"

The reply was, "He cannot see them all; but an inspector, in giving this boiler a thorough inspection, could both see and reach the braces; the corrosion could have been seen within 2 or 3 feet of the handhole by simply looking in."

Next Mr. Alexander Cauldwell was called to the stand and testified that he had examined the Riverdale's boilers ever since the year 1879, when they were built, and granted the certificate under which she run. He says, in answer to the question "When did you inspect them last?"

"On June 21 of this year, when I signed the certificate; I wish to say that on the 4th of April, when the boat was lying at Nyack and the boilers were being generally overhauled, I went on board with the engineer and two boiler-makers, Mr. McGee and Mr. St. Pierre. We surveyed every part we could get to and every repair made was precautionary; in leaving I told the engineer and boiler-makers that if they discovered any defect that we had overlooked to notify me or Inspector Mathews at the Government Office. The steamer commenced to run two or three days later, and when I went on board the engineer reported that everything was in first-class order. From time to time, as my habit is, I have seen the boilers when I could; I saw them almost every Sunday this summer—even on the Sunday before the explosion."

This is apparently tolerably fair, and had the cross-examination stopped here we might have supposed that everything was lovely, but the questioning went on:

"When you formally inspected the boilers in June, what did you do in the way of testing?"

"I went around the boilers when they were filled with cold water, and then put on a pressure of 62½ pounds; on the bottom of the boilers there must have been at least 60 pounds of cold-water pressure."

"Is that all you did?"

"Yes, sir, except that I constantly asked the engineer if any repairs were needed."

"Did you have the water let out and the manhole and handhole plates taken off, so that you could see the inside?"

"No; that was done by the engineer on the following Sunday; he examined the inside carefully."

"Were you present?"

"I was not; I asked the engineer if he wanted me to go up and look at the inside when the plates were off, and he said that he would attend to that himself."

"Then you merely used the cold-water tests and made exterior observations?"

"Yes, sir; I had the furnace doors opened and looked at the front and back connections closely."

"You did not examine the inside at all?"

"I did that at Nyack two months previously."

"Did you see any evidences of corrosion then?"

"No, sir; besides, the engineer said it was all right."

"In making an inspection of boilers, do you depend upon the judgment of the engineer or upon your own?"

"On my own, of course; but still the engineer is in charge, and is both responsible and intelligent."

"Do you consider the inspection you have stated to be a sufficient one?"

"Well, I had seen all the repairs made two months before, and under the pressure the boilers appeared unusually tight; I did what I considered to be my full duty."

The witness said that, in his opinion, the corrosion of the boiler might have occurred in two months.

"Are you sure that there was no corrosion when you inspected the boilers in April?"

"I am confident; besides, the boat did not run for several days after, and my orders were to notify me if there was anything wrong."

"Isn't that rather reversing the rule, for the owner to notify the inspector that repairs are needed, instead of the inspector notifying the owner?"

"You misunderstand me; I did not order the owner to do so, but the engineer and boiler-makers; it was at least precautionary for me to do so."

"Would it not have been more precautionary and in the line of duty if you had made a thorough inspection?"

"I could not look through the boilers when they were full of water."

"Why did you not have them emptied?"

"That was done afterward by the engineer."

"In all the inspections made since 1879 were you ever inside of those boilers?"

"No, sir; I could only get my head and shoulders in the manhole, and the others held a light so that I could see."

Mr. Cauldwell said that the boilers were supposed to be cleaned every Sunday, but he did not think they had been cleaned since the 4th of July. "I wish I could tell the cause of the explosion," he added.

"What, do you mean to say that with these corroded plates before you there is not sufficient evidence to show the cause of explosion?"

"No, sir; I think there was some substance in the boiler foreign to the iron itself."

"Do you think from the look of these plates that this boiler could carry 40 pounds of steam safely?"

"No; I wonder it did not explode with less."

This extract we consider the richest piece of reading we have come across for a long time, and the most caustic criticism on Uncle Sam's ways and means of looking out for the safety of the passengers on steamers we have ever seen. The inspector calmly testifies that he had not examined the inside of the boiler at all; did not see any evidence of corrosion and "the engineer said it was all right." He did not go up and look at the inside when the plates were off, because the engineer said he would attend to that himself. He was confident that there was no corrosion in the boilers when he inspected them in April, because orders were given to the engineer to notify him if there was anything wrong. The plates that gave way, it seems, were corroded to the thinness of paper, or, say, $\frac{1}{16}$ inch. Daniel W. Taulman, the engineer, in answer to the question, "Do you think, from the appearance of these plates, that the boiler could have carried 40 pounds of steam safely?" says, "I should say not." One of the witnesses, Mr. Andrew Fletcher, who built the boilers, says that they were corroded to less than $\frac{1}{8}$ inch at the point of rupture. If further proof is necessary to show the utter inefficiency of the steamboat inspection service, we are unable to see what it can be.

TRADE PUBLICATIONS.

F. W. DeVoe & Co.,

corner Fulton and William streets, New York, have issued one of the most interesting and beautiful catalogues of paints, oils and varnishes we have ever seen. It is a book of 136 pages, 6 x 8 inches, bound in alligator leather covers. The chromo lithography is excellent, consisting of colored *fac similes* of the labels on their leading colors. The goods catalogued and described include their entire line of dry and mixed colors, water and distemper colors, lute colors, oils, varnishes, japans, brushes, drawing and mathematical instruments for engineers' use, glaziers' and gilders' tools, stencils, gold and silver leaf, bronzes. This firm have done a great deal to perfect color manufacture in this country, and their artists' colors have long been recognized as superior in quality and permanence to those of the most famous London color men. Their catalogue is something unique in the way of trade publications, and will be examined with interest by all into whose hands it may come.

Gas and Water Pipes.

Messrs. Haniel & Lueg, of Düsseldorf-Grafenberg, Germany, have sent us one of their illustrated circulars giving particulars relative to the pipes and pipe connections turned out by them. The different parts, as there stated, are cast on end in baked molds, and are tested under a pressure of 20 atmospheres before being placed upon the market. Pipes intended for service where unusually high pressure are likely to be encountered are subjected to test pressures two or three times in excess of the greatest estimated working pressure. In addition to engravings representing the different shapes turned out, the circular contains a table giving the thicknesses and diameters of the pipes, widths of flanges, weights, prices and other particulars of interest to the trade.

Steam Fans and Exhausters.

B. F. Sturtevant has just got out an illustrated circular of his steam fans and exhausters for warming and ventilating buildings. There are 30 engravings illustrating steam exhausters or fans in pairs or otherwise, built with openings vertical, horizontal, right and left hand, with iron cases, iron and brick cases and entire brick settings. Each combination is carried through all the possible changes, so that the engineer or purchaser can see at a glance every possible combination of the machine and be able to decide upon that which is the most suitable for his purpose. Those cases having all their parts of sheet iron are all of them fitted with vertical engines; those in which a brick foundation or partial brick cases are used, have horizontal engines.

Special Notices.

RECENT BOOKS.

Brassey, Sir Thomas.—The British Navy; Its Strength, Resources and Administration (London). $1.40.

Cunynghame's Law of Electric Lighting (London). $5.

Decoration in Painting, Sculpture, Architecture and Art Manufactures. $3.

Dixon's Machinists' and Steam Engineers' Practical Calculator. $2.

Murgue, D.—Theories and Practice of Centrifugal Ventilating Machines.

Scott, J.—Draining and Embanking (London). 60 cents.

Scott, J.—Irrigation and Water Supply (London). 60 cents.

O'Brine, D.—Practical Laboratory Guide in Chemistry. $1.50.

Workshop Receipts (second series); Devoted Mainly to Subjects Connected with Chemistry. $2.

Crane, W. J. E.—The Sheet Metal Worker's Guide. 60 cents.

Donaldson, Wm.—Poncelet Turbine and Water Pressure Engine and Pump. $2.

Morrison, R. S.—Mining Reports; English and American Reports on the Law of Mines. $5.25.

Sternberg, G.M.—Photo-Micrographs and How to Make Them. $3.

Sherrerd, J. M.—Iron Analysis Record, with Complete Table of Atomic Weights. $1.25.

Thompson, Prof. S. P.—Life of Phillip Reis, the Inventor of the Telephone. $3.

Sent postpaid, on receipt of price, by

DAVID WILLIAMS,

Publisher and Bookseller,

83 Reade St., NEW YORK.

Special Notice.

A Pocket Manual for Engineers. Edited by John W. Hill, M. E. Edition, 10,000. Printed from Electrotype Plates on White No. 1 Book Paper. One half stiff Morocco Covers; one-half Cloth, with Cardinal Edges. Will be distributed, postage prepaid, on receipt of $1.25 each.

A pocket manual or useful information for Mechanical Engineers, Steam Users and Mechanics, containing 224 pages (size 4½ × 6½ Nonpareil type) of carefully selected data, formulæ and experimental investigations from the latest and most approved sources. Published by WM. A. HARRIS, builder of Harris-Corliss Steam Engines, Providence, R. I., to whom all subscriptions for copies should be sent.

For Sale.

A complete set housings to fit 16-inch train. Will be sold at about price of scrap iron.

Also two second-hand Boilers. One 48 inches diameter, 24 feet 7 inches long. One 53 inches diameter, 26 feet 5 inches long.

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FOR SALE.

Extra Heavy

24-INCH LATHES

Strongly geared: also Heavy and Improved 36-inch Planers. Good workmanship and material. Price very low.

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22d st. and Washington ave.,
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Wholesale Hardware Auctioneers,

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Sales held weekly for the trade. Consignments solicited. We refer to the leading manufacturers and importers.

Wanted.

Engine, with Cylinder 22 to 28 inches in diameter and 42 to 48 inches stroke, in good order; with or without fly-wheel. State price, terms and approximate weight.

Address P. O. Box 1026,
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A young man, graduate of the School of Mines at Stockholm, Sweden, with four years' experience in Open-Hearth Steel Works, desires a situation as Chemist, or Assistant, at some Steel Works. Has first-class references from one of the largest French Steel Companies.

Address "CH. T.,"
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A SMALL SIZE SECOND-HAND CUPOLA FURNACE.

Address, stating make, size and price,

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Situation wanted by a Furnace Manager who has erected and managed large works. Has been accustomed to the details and management of Mines, Railroads and all official duties and reports connected with the position.

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WANTED—An interest in, or would accept position with, some Hardware firm, now or January, 1884, by a young man of experience and capital.

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A TRAVELING SALESMAN, of considerable acquaintance, wishes to represent two or three firms in connection with his present position. Satisfactory references furnished.

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Situation Wanted.

Guide Roller open for engagement. Also capable of Turning Rolls. Address

"ROLLER—69."
Office of *The Iron Age*, 83 Reade st., New York.

WANTED—By an experienced man, a situation as Manager of a Nut or a Nut and Bolt Factory or a partner to start such a factory. I own the patterns for the improved Pittsburgh Nut Machine, best in use. Address, "C. B.,"
Care of William Fisher,
24th and Smallman Sts., Pittsburgh, Pa.

WANTED.

A situation to travel, by a Gentleman who has traveled among the Hardware Trade for 10 years. Best of references given as to ability, &c.

Address "G. R.,"
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WANTED.

A situation by a young man who has had four years' experience in a Hardware and Mill Supplies Store. Would like a position as Clerk or Traveling Salesman in a Hardware or Cutlery firm.

Address LOCK BOX 323, East Greenwich, R. I.

Special Notices.

BARGAINS.

30-in. swing, 18 ft. bed, New Haven Lathe.
24-in. swing, 17 ft. bed, Bement, Marshall & Ball Lathe.
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16-in. swing, 6 ft. bed, Perkins Lathe.
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23 in. × 9 ft. bed, New Haven Planer.
30 in. × 7 ft bed, New Haven Planer.
12½ × 24 Horizontal Engine.
12 × 24 Horizontal Engine.
10 × 16 Horizontal Engine.
10 × 14 Horizontal Engine.
10 × 12 Horizontal Engine.
9 × 12 Horizontal Engine.
Two 8 × 12 Horizontal Engines.
7½ × 14 Horizontal Engine.
Two 7 × 10 Horizontal Engines.
5 × 10 Horizontal Engine.
8 × 10 Vertical Engine.
6½ × 8 Vertical Engine.
6 × 7 Vertical Engine.
6 × 6 Vertical Engine.
5 × 6 Vertical Engine.
4½ × 5 Vertical Engine.
4 × 4 Vertical Engine.
3 × 4 Vertical Engine.
10 Horse Portable on skids.
42 × 9 ft. Vertical Boiler, 88 2-inch tubes.
36 × 8 ft. Vertical Boiler, 66 2-inch tubes.
39 × 7 ft. Vertical Boiler, submerged tubes.
Two 30 × 6 ft. Vertical Boilers.
28 × 6 ft. Vertical Boiler.
24 × 5 ft. Vertical Boiler.
22 in. × 51 in. Vertical Boiler.
36 × 10 ft. Horizontal Boiler.
30 in. × 7 ft. 10 in. Horizontal Boiler.

A large assortment of all styles of Boilers, Engines, Belt Jumps, Shafting, &c., &c.

Write for prices and tell us what you want.

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FIRST-CLASS PAYING BUSINESS For Sale.

Parties having built up and thoroughly established an extensive and fine paying business, will sell the same, including several fine machinery specialties in iron and wood, and a jobbing business of every class of Gearing, Shafting, &c., and Foundry and Woodwork. Specialties have but little competition and are easily managed. The jobbing business includes a very fine collection of patterns in constant use, and controlling a very large jobbing trade. Also Machinery, Tools, Stock, &c., and good will.

Above business is constantly growing, and has every year cleared **a very large amount of money.** Is centrally located and upon a large and never-failing water power, with canal through premises and excellent railroad facilities. The reason for owners offering same is because the business has grown too large for present buildings and facilities and is contantly growing, and they desire to remove one specialty, for which they have lately secured letters patent and requiring special buildings and machinery, to the center of its market in the West, which will relieve sufficiently the present facilities now overcrowded. Or should any parties desire, we will sell the specialty and retain the other business.

The straightforwardness of above facts can be readily ascertained.

Any young man or old business men having money will find either business a very pleasant and profitable one. To save annoyance or trouble, we will answer inquiries only from parties with commercial standing or who are vouched for by bankers or other responsible parties. Would prefer parties with means, interested and looking for an established, paying business, to call personally upon us with proper letters and introductions.

E. W. ROSS & CO.,
Fulton, N. Y.

Wanted.

A SALESMAN AND GENERAL MANAGER

in an established manufactory, for a special article of Hardware.

One familiar with the Western trade and buyers, and having capital to invest, will find this a good opportunity for permanent and profitable employment.

Address "FACTORY,"
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OF BEST AND LATEST CONSTRUCTION,

MALMEDIE & HIBY,

Dusseldorf-Oberbilk (Germany),

MANUFACTURERS.

For particulars, please address

L. HERNSHEIM,

20 Nassau Street, - - NEW YORK.

Sole Agent for U. S. and Canada

Wanted.

Competent Foreman to take charge of Light Hardware Manufactory. Must thoroughly understand his business. To such a man a good place is open.

Address "HARDWARE," Box 14,
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Wanted.

A FIRST-CLASS STEEL ROLLER,

industrious, experienced and capable of Rolling Rounds, Squares, Flats and miscellaneous sizes to exact gauge. Sober and able to manage men. A fine place and good pay to the right man. None but capable workmen need apply.

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WANTED.

By a Roller of 27 years' experience, a situation as Guide, Bar or Hoop Roller, Iron or Steel. Satisfactory references as to character and ability.

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For Immediate Delivery.

600 TONS BLACK SHEET IRON,
Assorted Gauges.
2000 TONS ASSORTED BARS, BANDS & HOOPS.
Write for particulars.

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Warren, Ohio.

A FIRST-CLASS HARDWARE MAN, single, 24 years old, now filling a responsible position, would go to Mexico or South America if satisfactory arrangements could be made.

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July 19.

One Corliss Beam Condensing Engine, 30 in. × 72 in.
One Horizontal Corliss Engine, 16 in. × 42 in.
One Horizontal Corliss Engine, 14 in. × 30 in.
One Horizontal Corliss Engine, 12 in. × 30 in.
One Horizontal Corliss Engine, 10 in. × 22 in.
One Horizontal Engine, 12 in. × 24 in.
One Horizontal Engine, 12 in. × 16 in.
One Horizontal Engine, 11 in. × 24 in.
One Horizontal Engine, 9 in. × 16 in.
One Horizontal Engine, 8 in. × 16 in.
One Horizontal Engine, 8 in. × 12 in.
One Hor. Tub. Boiler, 6 ft. × 15 ft.
One Hor. Tub. Boiler, 4½ ft × 13½ ft.
One Hor. Tub. Boiler, 3½ ft. × 14 ft.
One Locomotive Boiler, 100 H. P.
One Upright Boiler, 30 in. × 8 ft.
One Upright Boiler, 48 in × 11 ft.
One Portable Engine, 8 in. × 12 in.
One Engine Lathe, 22 in × 12 ft. New.
One Engine Lathe, 18 in. × 8 ft.
One Engine Lathe, 17 in. × 6 ft. Pond.
One Engine Lathe, 16 in. × 6 ft. Blaisdell.
One Engine Lathe, 13 in. × 5 ft.
One Engine Lathe, 14 in. × 4 ft.
One Engine Lathe, 42 in. × 15 ft.
One Turning Lathe. Very heavy
One Engine Lathe, 20 in. × 8 ft.
One Planer, 36 in. × 9 ft. 6 in.
One Planer, 34 in. × 6 ft. Novelty.
One Planer, 22 in. × 8 ft. Fitchburgh
One Crank Planer, 24 in. × 5 ft.
One Slotting Machine, 44 in.
One Large Upright Drill, 60 in.
One Large Upright Drill, 24 in.
One Triple-Geared Drill, 48 in.
One Upright Drill, 40 in.
One Upright Drill, 36 in.
One Ames 4-Spindle Drill.
One Milling Machine. Wood & Light.
Two Gear Cutters. Pratt & Whitney.
One Davis Pump, No. 4. New.
One Dean Steam Pump, No. 3½. New.
One 10 H. P. N. Y. Safety Co.'s Engine and Boiler.
One Portable Boiler, 25 H. P.
One Locomotive Boiler, 3 ft. × 12 ft.

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For Sale.

EUREKA IRON CO.'S PROPERTY

AT WYANDOTTE MICH.

The Charter of this Company expires by limitation on the 24th of October next, and the whole of the plant and real estate is now offered for sale. If any portion remains unsold at private sale on the 16th of October, 1883, it will be offered at Public Vendue, at the office of the Company, in Wyandotte, at 11 o'clock A. M. on that day.

The property consists in general of two Blast Furnaces (one in use and one modern rebuilding). They have all the plant necessary for making 70 to 80 tons Charcoal Pig Iron per day. The furnace rebuilding can be used for making Coke Iron.

The Mills for the manufacture of Boiler Plate, Tank, Sheet and Bar Iron, Knobbing and Puddling Furnaces are complete, as well as the Foundry Cupolas, Boiler, Machine, Blacksmith and Pattern Shops, Testing Machines, Weigh Scales, Docks, Railroad Tracks, Locomotives, Charcoal Kilns, Cars, Dock, Steam Cranes, &c., &c.

Brick general offices, with about 1200 acres of land in and contiguous to Wyandotte, and about 270 City Lots. Quantity of ore, pig iron, &c.

For details, apply to

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Foundry situated at 2028 N. 10th St., Philadelphia. In good running order. 147 feet front on 10th St. and 120 feet back on Alter St. Room for fifteen moulders. Plenty of work, good locality and good customers. For further particulars, address

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A FIRST-CLASS PLATE AND SHEET ROLLER.

Must be capable of superintending Mill Construction, Location of Machinery, &c.

Highest references as to competency, sobriety, &c., will be required.

Address

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For a large iron interest in the South.

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Wanted.

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An Engineer and Constructor of Iron Works is open for a new engagement after the 1st of October next. Address

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Wanted.

HEAVY CASTINGS AND ROLLS.

Wanted to buy Old Heavy Castings and Rolls of all kinds. Address

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CORRESPONDENCE SOLICITED

from parties intending to purchase Steam Riveters, Steam Hammers, Hydraulic Presses, Heavy Punch and Shears, &c., &c.

Estimates given for good work very low.

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1 Pit Lathe, 10 ft. swing. 2d hand.
1 Bull Lathe, 90 in. swing, 20 ft bed. 2d hand.
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1 Engine Lathe, 36 in. swing, 20 ft. bed. New.
1 Engine Lathe, 34 in. swing, 17 ft. bed. New.
1 Engine Lathe, 34 in swing, 9 ft. bed. New.
1 Engine Lathe, 32 in. swing, 21 ft. bed. 2d hand.
1 Screw-cutting Gap Lathe, 26 in. swing over bed, 48 in. swing over gap; bed 24 ft. long. New.
1 each Engine Lathes 26 in. swing, 10 ft., 12 ft., 14 ft., 16 ft., 20 ft., 24 ft. bed. New.
1 Engine Lathe, 24 in. swing × 12 ft bed. New.
2 Engine Lathes, 24 in. swing, 9 ft. bed. New.
1 Engine Lathe, 23 in. swing, 16 ft. bed. 2d hand.
1 each Engine Lathes, 21 in. swing, 6 ft., 8 ft., 10 ft., 12 ft. bed. New
1 each Engine Lathes, 20 in. swing, 6 ft., 8 ft, 10 ft., 12 ft. bed. New.
1 Engine Lathe, 20 in. swing, 8 ft. bed. 2d hand.
1 Engine Lathe, 20 in. swing, 9 ft. bed. 2d hand.
1 each Engine Lathes, 19 in. swing, 7 ft, 8 ft., 10 ft. bed. New.
4 Engine Lathes, 19 in. swing, 6 ft. bed. Nearly new
1 Engine Lathe, 19 in swing, 7 ft. bed. 2d hand.
1 Engine Lathe, 18 in. swing, 21 ft. bed. 2d hand.
1 Engine Lathe, 18 in. swing, 10 ft. 6 in. bed. 2d hand
1 each Engine Lathes, 17 in. swing, 6 ft., 7 ft., 8 ft., 10 ft. bed. New.
1 Engine Lathe, 17 in. × 7 ft. bed. 2d hand.
1 Engine Lathe, 15 in. swing, 9 ft. bed. 2d hand.
2 " 15 " " 6 " " New.
1 " 14 " " 6 " " 2d hand.
1 " 13 " " 6 " " New.
3 " 13 " " 5 " " "
1 " 12 " " 5 " " "
1 " 11 " " 5 " " "
1 " 10 " " 4 " " "
2 Hand Lathes, 15 in. × 5 ft. bed. New.
1 " 13 in. × 5 ft. bed. 2d hand.
1 " 12 in. × 4½ ft. bed. New.
1 " 12 in. × 4 ft. bed. New.
1 " 11¼ in. × 4 ft. bed. New.
1 " 11 in. × 5 ft. bed. B. G. 2d hand.
1 " 10 in. swing, 4 ft. bed. 2d hand.
1 " 10 in. swing, 3½ ft. bed. 2d hand.
1 " 10 in. × 2 ft. New.
1 Single Head Lathe.
1 Bench Lathe, 8½ in. × 3 ft. bed. New.
1 Foot Lathe, 8½ in. × 3 ft bed. New.
1 Foot Lathe 12 in. × 4 ft. bed. New.
1 Foot Lathe 8 in. × 3 ft. bed. Back-geared.
1 Foot Lathe 8 in. × 2 ft. 8 in bed. New.
1 Turret Lathe and Chuck. 2d hand. 16 in. × 5 ft.
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1 Planer to plane 60 in. × 60 in. × 25 ft. New.
1 Planer to plane 58 in. × 54 in. × 16 ft. 2d hand.
1 Planer to plane 33 in. × 33 in. × 7 ft. 2d hand.
1 Planer to plane 33 in. × 33 in. × 9 ft. 2d hand.
1 Planer to plane 30 in × 30 in. × 7 ft. 2d hand.
1 Planer to plane 26 in. × 26 in. × 7 ft. 2d hand.
1 Planer to plane 18 in. × 18 in. × 4½ ft. 2d hand.
1 Planer to plane 31 in. × 30 in × 10 ft. 2d hand.
1 Planer to plane 34 in. × 32 in. × 12 ft. 2d hand.
1 Planer to plane 32 in. × 32 in. × 8 ft. Nearly new.
1 Planer to plane 27 in. × 27 in. × 7 ft. New.
1 Planer to plane 24 in. × 24 in. × 8 ft. New.
1 Planer to plane 24 in. × 24 in. × 6 ft. New.
1 Planer to plane 24 in. × 24 in. × 5 ft. New.
1 Planer to plane 22 in. × 22 in. × 5 ft. New.
1 Planer to plane 20 in. × 20 in. × 4 ft. New.
2 Planers to plane 16 in. × 16 in. × 4 ft. New.
3 Crank Planers. New.
2 Shapers, 15-in. stroke, 23-in. traverse. New.
1 Shaper, 8 in. stroke. New.
1 Shaper, 6 in. stroke. New.
1 Shaper or Comp. Planer, 10-in. st., 8 ft. 9 in. bed. Trav. Hd., 2 Tables. 2d hd.
1 Shaper, 12-in. stroke, 33-in. traverse. New.
2 Shaper, 12-in. stroke, 18-in. traverse. New.
2 Shaping Machines, 7-in. stroke. 2d hand.
1 Back-geared Milling Machine. New.
1 Milling Machine, with Arm. New.
1 Lincoln Miller. New.
1 Lincoln Miller. 2d hand.
1 Hand Miller. 2d hand.
1 Hand Milling Machine. New.
1 Miller and Screw Slotter, combined.
1 Double Face Miller. New.
1 Automatic Milling Machine. New.
1 40-in. Radial Drill. New.
1 48 in. " "
1 42-in. swing Upright Drill, B. G. & S. F. New.
3 24-inch Up. Drills. Bk. Gr. and Self Feed. New.
1 20-inch Lever Feed Upright Drill. New.
1 20-inch Lever and Wheel Feed Upright Drill. New.
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1 Pratt & Whitney 4-Spindle Drill. 2d hand.
1 Garvin's 4 Spindle Drill. 2d hand.
1 4-Spindle Drill Press. New.
1 3 " " " "
1 2 " " " "
1 Single Spindle Light Drill, Table Feed. New.
2 Bench Drills, Lever and Wheel Feed.
1 Single Spindle Profiler. New.
1 Two " " Light. New.
1 No. 2 Screw Machine, wire feed. New
1 Screw Machine. New. Not wire feed.
1 " Slotter. "
1 Cutter Grinder. "
6 Emery Grinders. New.
1 Slitting or Circular Shear. New.
2 Tapping Machines.
1 Upright Bor. and Turn. Mill, 10 ft. 4 in. swing. 2d h.
1 12-in. Slotting Machine, 50-in. swing. New.
1 8-in. " 36-in. swing. New.
1 Hydraulic Wheel Press for 72-in. Wheels. New.
1 13 ft. Bending Rolls. 2d hand.
1 Squaring Shear, 22 in. New.
3 Power Presses. New.
1 Foot Press. New.
1 Screw Press. New.
1 Drop Press. New.
1 Hand Lever Punch. 2d hand.
1 Lot Heavy Polishing Frames 2d hand.
3 Shafting Straighteners. New.
1 8 × 8 Upright Engine. New.
1 8 × 12 Portable Engine and Boiler. Good as new.
1 8 × 12 Horizontal Stationary Engine. Nearly new.
1 10 × 12 Horizontal Stationary Engine. New.
1 10 × 12 Stationary Engine. 2d hand.
1 9½ × 12 in. Stationary Engine. 2d hand.
1 8½ × 14 in. Stationary Engine. 2d hand.
1 9¾ × 12 in. Horizontal Stationary Engine. New.
1 5 in. × 6 in. Horizontal Stationary Engine. New.
1 5 × 12 Horizontal Stationary Engine. 2d hand.
1 10 H. P. Cylinder Boiler. 2d hand.
1 10 H. P. Upright Boiler. New.
1 10 H. P. Upright Boiler. 2d hand.
1 12 H. P. Locomotive Boiler. Nearly new.
1 No. 6 Steam Pump. 2d hand.
2 Grindstones and Frames. New.
1 48 in. Blacksmith Forge. 2d hand.
1 Lot 15 in. Smoke-stacks. 2d hand.

Wood-Working Machinery.

1 Saw Table. New.
1 Double Saw Bench. New.
1 24-in. Surfacer Rotary Bed. New.
1 Band Sawing Machine. New.
1 Scroll " "
1 Rod Machine. Self Feed. "
1 Sandpapering Machine. 2d hand.
1 8-in. Molder, 4 sides. 2d hand.
1 Edge Molding Machine. 2d hand.
1 Large Lot 2d-hand Pulleys, Hangers, &c.
And lot of others, both new and 2d hand.

If the list does not contain what you want, write us.

J. M. BADGER & CO.,

49 DEY STREET, New York City.

For Sale.

THE WHOLESALE AND RETAIL

HARDWARE AND STOVE BUSINESS

OF

F. J. HOGAN & CO.,

Little Rock, Ark.

LONG ESTABLISHED. A CLEAN STOCK OF ABOUT $20,000. SATISFACTORY REASONS FOR SELLING.

Special Notices.

New & Second-Hand Machinery.

FEB. 21, 1883.

1 Engine Lathe, 14 in. × 5, 6, 7 and 8 ft. Grant & Bogert
1 " " 20 in. × 12 ft., Grant & Bogert. New.
1 " " 45 in. × 15 ft. Good order.
1 " " 36 in. × 12, 17 ft. New.
1 " " 42 in. × 14 ft. New.
1 " " 14 in. × 6 ft. Star Tool Co. New.
1 " " 18 in. × 6 ft. New.
1 " " 14 in. × 5 × 6 ft. New.
1 " " 16 in. × 7 ft. Bridgeport. New.
1 " " 13 in. × 5 ft. and 6 ft. Ames. New.
1 " " 16 in. × 6, 7 and 8 ft. Ames. New.
1 " " 18 in. x 8 and 10 ft. Lodge & Barker. New
1 " " 27 in. × 10 in. Lodge & Barker
1 " " 22 in. × 12 ft. New.
1 " " 20 in. × 10 ft. New.
1 " " 28 in. × 16 ft. New.
1 " " 24 in. × 12, 14 and 16 ft. New.
1 " " 11 in. × 4 ft. and 5 ft. Prentiss. New
1 " " 12 in. × 5 ft. Young. New.
1 Plain Engine Lathe, 16 in. × 4 ft. New.
1 " " " 15 in. × 4 ft. New.
1 Fox Lathe, 15 in. × 5 ft. Am. Tool & Machine Co.
1 15 in. × 4 ft. Turret Lathe. Lodge & Barker.
1 Fox Turret Lathe, 16 in. × 6 ft. Lodge & Barker. New
1 Planer, 60 in. × 60 in. × 17 ft Good order.
1 " 32 in. × 32 in. × 7 ft. Good order.
1 " 16 in. × 16 in. × 3 ft. New.
1 " 22 in. × 20 in. × 8 ft. New.
1 " 24 in. × 24 in. × 6 ft. Hendey. New
1 " 26 in. × 26 in. × 7 ft. New.
1 " 16 in. Lever Table Drill. New.
1 Crank Planer, 16 in. × 16 in. × 13 in. New.
1 16-in. Upright Drill. New.
1 20-in. " Prentiss. New.
1 24-in. " Prentiss. New.
1 30-in. " Prentiss. New.
1 25-in. swing B. G. & S. F. Drill. Blaisdell. New
1 28-in. " " " "
1 38 in. swing, B. G. & T. F. Drill. New.
1 15-in. Shaper. Gould & Eberhardt. New.
1 10-in. Shaper. Gould & Eberhardt. New.
1 15-in. Shaper. Hendey. New.
1 24 in. Shaper. Hendey. New.
1 24-in. Shaper. Hendey. Good order.
1 9-in. Shaper. Hewes & Phillips. New.
1 9 in. Shaper. New.
1 14-in. Shaper.
Full Assortment of Milling Machines, Spindle Drills, &c., of Garvin's. New. J. & Lamson.
1 each Nos. 2 and 4 Screw Machines, Wire Feed. Jones
2 No. 2 Lincoln Millers. Good order.
2 No. 2 Lincoln Millers. New.
1 Hand Lathe, 12 × 4, 5 and 6 ft. New.
1 Hand Lathe, 16 in. × 6 and 7 ft. New.
1 Boring and Turning Mill, 50 in. New.
1 Boring and Turning Mill, 72 in., 2 Heads. New.
1 each 3 and 7 spindle Nut Tappers. New.
1 Gig Saw. Good as new. Rogers.
1 700-lb. Steam Hammer. Ferris & Miles. Good order

New York Agency of
THE TANITE CO. and GRANT & BOGERT MACHINE TOOL WORKS,

H. PRENTISS & CO., 42 Dey St., N.Y.

For Sale.

The Industrial Works of Shamokin, owned and successfully carried on for a number of years by the late Wm. Brown, deceased, consisting of Foundry and Machine Shop, and a large stock of Patterns regarded as part of the property. Boiler Shop, Blacksmith Shop and Factory for the manufacture of heavy coal screens. Well located in the borough of Shamokin, Pa., with the best facilities for shipping by rail, and surrounded by a district contributing all the work that a shop of that kind can possibly turn out. Easy terms of payment are offered to suit a purchaser of limited capital. For list of Tools and further particulars apply to

WM. McILVAIN & SONS,
Manufacturers of Boiler Plate and Tank Iron,
Reading, Pa.

For Sale.

One Granulator, with attachments.
One large Mixer, with attachments.
One No. 5 Vacuum Pump.
Two Sugar Packers.

The above is a portion of the Machinery formerly used at Baltimore Steam Sugar Refinery, Baltimore, Md. For information apply to

GEO. B. GRAHAM,
P. O. Box 689, Baltimore, Md.

FOR SALE.

Nos. 1, 2, 3, 6 and 8 Sturtevant Blowers; Nos. 2, 4 and 32 do. Exhausters; Vertical Engines, 2 H. P. and up; Horizontal (Burdon) do., 16 × 36; Baxter do., 4, 6 and 10 H. P.; (Chain) Planer, 29 × 29 × 5; Lathe, 30 × 14; Hoisting Engine, 9 × 12; Clayton Air Compressor, 24 × 24 (new). Wanted: Root, McKenzie, Sturtevant and Baker Blowers, Engines, Boilers and Machine Tools to sell. Correspondence solicited. Purchases carefully made for parties out of the city. C. R. BIGELOW, M. E.,
18 New Church St., New York City.

For Sale.

A $4000 stock of Hardware, also building and lot. Good trade established. Will sell for cash at cost, freight added. Good reasons for selling. Location, Wayne, Wayne County, Neb. Splendid opening for parties wanting a Hardware stock

Address at once. PEAVEY BROS.,
Sioux City, Iowa.

For Sale.

TWO BLOWERS, Alden & Dimpfel, 48-in. Will be sold cheap. For price, &c., address

SITES & GILL,
222 and 224 So. Third Street, Philadelphia, Pa.

For Sale—Lathes and Machinery.

15 in. × 6 ft. second-hand Engine Lathe. $175; 15 in. × 6 ft. Lathe, used two months, $200; 16 in. × 6 ft. new first-class Lathe, $275; 18 in. × 7 ft. new first-class Lathe, $330; 22 in. × 12 ft. new first-class Lathe, $500; Drill and Lathe Chucks for same, very low. 20 in. Drill Press, new design, $100; 26 in. Back-geared Drill Press, new, $210; Planers, Planer Chucks, Hand and Power Presses, Nut Tappers, Bolt Cutters, Headers, &c. S. M. YORK,
Cleveland, Ohio.

For Sale Cheap.

A No. 1 Engine, 12 × 10 inch stroke, very heavy bed plate, 11 ft. long; Fly Wheel, Shaft, Pulley, &c., complete. Engine, 8½ × 12 inch stroke, all complete. New Steel (Tubular) Boiler, 10 feet long, 36 inches diameter, Stack Front, &c., ready for use. Two large Steam Shears, suitable for Rolling Mill or Scrap Iron Yard shears, Pipe, Tank, Boiler Plate and Rails, Iron or Steel; all fully geared, in working order. A great bargain. Address "OWNER,"
P. O. Box, No. 469, Pittsburgh, Pa.

For Sale.

We offer for sale a nearly good as new horizontal steam engine of 22 inches diameter of steam cylinder, by 6 feet stroke, with hot-water pumps and heater all complete. Price on cars, $2000; weight about 72,000 pounds. Immediate delivery; sold for want of use. Can be seen at our works.

WEIMER MACHINE WORKS COMPANY
Lebanon, Pa.

Hardware Business For Sale.

In a large and rapidly growing manufacturing town in Western New York. An old-established business in the best location in town, with exclusive control of several leading articles in the trade. Proprietor's ill health the cause of selling.

Address "J. T."
Office of *The Iron Age*, 83 Reade st., New York

Wanted.

A situation as Superintendent or Foreman in a Gray Iron Foundry. Light work preferred. Best of references. C. H. W.,
Office of *The Iron Age*, 83 Reade Street, N. Y.

TO RENT.

Desirable Offices, first and second floors, No 267 So. 4th St., Philadelphia.

SCREVEN & CONCANNON,
First Floor Back

Trade Report.

BRITISH IRON AND METAL MARKETS.

[*Special Cable Dispatch to The Iron Age.*]

LONDON, WEDNESDAY, Sept. 26, 1883.

Scotch Pig.—There is a better feeling in the market and prices are a little firmer. We quote makers' brands as follows:

Coltness, alongside,		Glasgow	57/6
Langloan,	"	"	58/
Gartsherrie,	"	"	55/
Summerlee,	"	"	56/6
Carnbroe,	"	"	54/6
Glengarnock,	"	Ardrossan	54/
Eglinton,	"	"	48/6
Dalmellington,	"	"	48/6
Shotts,	"	at Leith	58/

Lighterage from Ardrossan to Glasgow is 1/ ₱ ton.

Cleveland Pig.—The market is quiet and unchanged. We quote as follows, f.o.b. shipping ports:

Middlesboro' No. 1	Foundry	43/6
" No. 2	"	42/6
" No. 3	"	39/ @ 39/6
" No. 4	Forge	38/

Bessemer Pig—Nominal at 49/ @ 50/ for mixed lots W. C. Hematites, Nos. 1, 2 and 3, equal parts, f.o.b. shipping ports.

Blooms.—But little business doing.

Manufactured Iron.—The market is steadier. We quote at works:

		£	s.	d.		£	s.	d.
Staff. Ord.	Marked Bars	7	10	0	@			
"	Medium "	6	5	0	@	6	15	0
"	Common "	6	0	0	@	6	5	0
Hoops, 20 W. G. and over.								
"	Common Best	7	0	0	@	7	5	0
"	Medium	6	5	0	@	6	15	0
"	Common	6	10	0	@			
Sheets, 20 W. G. and under.								
"	Ordinary Best	8	15	0	@	9	5	0
"	Common	8	0	0	@	8	5	0
Welsh Bars		5	5	0	@	5	7	6

Steel Rails.—The market is steady and prices unchanged. We quote Ordinary Sections, £4. 15/ @ £5. 10/, f.o.b. shipping ports.

Iron Rails—Dull and nominal.

Old Rails.—The market is quiet and unchanged. Old T's are quoted £3. 5/, and D. H.'s, £3. 12/6 @ £3. 15/, c.i.f. New York.

Scrap.—Heavy Wrought is quoted £3. 5/ @ £3. 7/6, c.i.f. New York. Bessemer Crop Ends are quoted 60/ for run of mill, f.o.b. shipping ports.

Copper.—The market is weaker. We quote Best Selected, £68. 10/ @ £69, and Chili Bars, £63. 5/ @ £63. 10/.

Tin—Is firmer and prices are higher. We quote Straits Ingot, spot, £95. 10/ @ £96, and futures, £95. 10/ @ £96. 5/.

Tin Plates.—The market is unchanged. We quote:

Tin Plates, 10 x 14,	1st qual.	Charcoal	19/6	@ 21/6
" "	2d "	"	18/6	@ 19/
" "	1st "	Coke	17/6	@ 18/
" "	2d "	"	16/	@ 16/6

Spelter.—The market is steadier and quotations are higher. We quote Ordinary, at shipping ports, £15. 5/ @ £15. 7/6.

Lead—Is quiet and unchanged. Common English Pig is quoted £12. 10/ @ £12. 15/.

Freights.—Steam from Glasgow to New York, 6/6 @ 7/; Liverpool to New York, 4/ @ 5/; Liverpool to Philadelphia, 5/ @ 6/6, and London to New York, 7/6 @ 9/6.

TRADE AND FINANCE.

Office of *The Iron Age*,
WEDNESDAY EVENING, Sept. 26, 1883.

Aside from a temporary disturbance caused by heavy failures in the clothing trade, there is a wholesome tone pervading business circles, the volume of trade being very fair and the outlook cheering. But any statement of the rose-hued order must be taken with some qualification. In a review of the week it is seen that the total exports, compared with the imports, fall short of expectations, taking into account the profusion of agricultural products this autumn; the course of the stock market is downward, influencing other markets by sympathy, to some extent; the bank statement is not so favorable, and there is a provoking succession of mercantile failures, sufficient to impair confidence. Besides this, taking the transactions of the Produce Exchange as a criterion, the business of the autumn thus far is disappointing, as a result of declining values—this despite the fact, now well confirmed, that both American and foreign crops are deficient, compared with recent estimates. As concerns breadstuffs, however, the course of prices during the past week affords signs of reaction, there being a decidedly better feeling at home and abroad, with a tendency to stronger prices. The principal drawback is the absence of a good export demand, speculators having o'erleaped themselves. The same remarks are generally true of cotton, although the export movement thus far has nearly doubled, compared with last year, and the rates of sterling exchange are weakening in anticipation of a still better supply of bills from this source. For the moment rates are stronger, and are quoted $4.83½ @ $4.86½.

Taking the country at large, the bank clearing house exchanges indicate a decreased volume of business, compared with last year, equal to 4.3 % in the aggregate returns from 27 cities, while in this city the falling off is 26.4 %, mainly due to the absence of speculation. The gains, it is well to observe, are chiefly in the South, the chief manufacturing points showing losses compared with 1882. Speculative circles were perceptibly affected by heavy failures in the Hebrew branch of the clothing trade—that of F. Mayer & Co., of White street, followed by Levy Bros. & Co., of Broadway. The latter yesterday filed an assignment to Solomon H. Kohn, of the Chrome Steel Works, Williamsburgh, N. Y., giving preferences amounting to about $900,000. The liabilities are $1,500,000 to $1,600,000, assets about $2,000,000. The troubles thus arising are attributed in the trade to a vicious system of mutual accommodation in obtaining discounts, and to injudicious investments in real estate.

General trade is moderately active and steadily improving, transactions in general merchandise during the last week being heavier in amount than during any previous week for a considerable period. All the transportation lines report a liberal movement of freight. The Southwest is reported to have purchased in this market more largely than usual, and between New York and the Eastern States trade appears to have been quite active. Low water in the streams is a source of serious embarrassment, many mills—cotton, woolen and paper—being compelled to curtail their production or stop altogether. In the West, trade is very active. The Chicago *Times* says: "This has proved the most active season ever known." The Louisville *Gazette* says: "It is questioned whether there was ever witnessed a more gratifying and auspicious opening of fall trade in St. Louis than that of the present season." East-bound shipments of freight from Chicago last week amounted to 48,254 tons, and the movement has been steadily increasing since the beginning of August.

On the Stock Exchange the conspicuous feature is the attack on the Northern Pacifics, or Villard properties, which has been maintained with persistency through the week, until values have fallen more than 30%, compared with three months ago. From the annual report it appeared that nearly $8,000,000 are needed to cover the cost of construction, but the movement for a decline was commonly attributed to speculative manipulation. Monday was a very active day, and the decline was heavy under a vigorous raid, which sent the Villard shares down to the lowest price yet recorded, and the Vanderbilts suffered severely; also Delaware and Lackawanna and Lake Shore. On Tuesday there was a stronger tone and some improvement in the general list. Reported failures in the clothing trade had a depressing effect. To-day a better feeling prevailed throughout, with higher prices. The principal sales were: New York, Chicago and St. Louis 1st's, $95,000, 99¼ @ 99; New York, Lackawanna and Western 1st's, $10,000, 117¾; Iron Mountain 5's, $30,000, 75 @ 74⅞; St. Paul and Minneapolis 2d's, $12,000, 111 @ 110¾; Oregon Transcontinental 1st's, $3000, 87; Texas Pacific and Rio Grande 6's, $21,000, 77¼ @ 76¾; Louisville and Nashville general mortgage, $5000, 93; Oregon Navigation 1st's, $1000, 106¾; New York, West Shore and Buffalo 1st's, $42,000, 73¼ @ 72½; Northern Pacific 1st's, $15,000, 102⅞ @ 102½; Denver, Rio Grande and Western 1st's, $45,000, 67 @ 66½.

The following were the closing quotations for Government bonds:

	Bid.	Asked
U. S. 4½, 1891, registered	113⅝	113⅞
U. S. 4½, 1891, coupon	113⅞	113¼
U. S. 4, 1907, registered	119⅞	120
U. S. 4, 1907, coupon	120⅞	121
U. S. 3 per cents	101¾	102¼
U. S. Currency 6s, 1895	130	—
U. S. Currency 6s, 1896	131	—
U. S. Currency 6s, 1897	132	—
U. S. Currency 6s, 1898	134½	—
U. S. Currency 6s, 1899	135	—

The imports of foreign merchandise at this port during the past week were of good proportions, the entries of both general merchandise and dry goods being about equal to those of last year. The total is $9,972,011, of which $6,997,566 represent general merchandise and the remainder ($2,974,445) dry goods. Tin, hides and india-rubber have been received in considerable quantity, and sugar and coffee have also been coming in to a fair extent. Since January 1, the imports aggregate $339,398,995, compared with $372,476,458 for the corresponding period of 1882. The importations of specie and bullion at this port during the week ending September 21 were $780,242, consisting of $417,025 in gold and $363,217 in silver, as against a total of $40,124 for the week ending September 22 last year. Since January 1 the imports of specie amount to $11,500,000, against only $2,700,000 for the corresponding date last year, and the exports of specie since Jan. 1 amount to $11,500,000, against nearly $44,000,000 for the corresponding date last year. The exports of domestic produce from this port during the past week were heavier than of late, the total being $7,442,624, against $8,283,264 for the same week last year. There was a fairly good movement of nearly all the leading staple products. Since January 1 the exports aggregate $261,696,204, compared with $247,955,796 for the corresponding period of 1882.

The weekly statement of the Associated Banks was unfavorable, showing a decline of $1,831,075 in surplus reserve; but the reserve is still $1,907,350 above requirements, compared with a deficiency a year ago of $2,217,825. In loans there was an expansion of $2,909,100, while deposits showed only a slight gain. The local money market continues unchanged and easy, notwithstanding a transfer of $2,000,000 in specie to the West and South. The reduced movement to the interior, compared with former years at this season, is construed as indicating a more independent condition of the agricultural classes. We quote 60 to 90 days' indorsed bills receivable 6 per cent.; four months acceptances, 6 @ 6½. The failure of the Exchange Bank of Montreal gave rise to suspicion of further weakness in the same direction, which thus far is without corroborating evidence. The recently published statement of the condition of the banks of the Dominion would indicate an increase of strength, rather than the contrary, compared with a year ago.

The bond call issued by the Treasury Department, amounting to $15,000,000, had no appreciable effect in this market. The present large surplus, according to the authority of Treasury officials, indicates that not less than $45,000,0000 more may be called for during the current fiscal year, there being a large unexpended balance from the appropriation for pensions.

In dry goods a satisfactory trade is in progress, with a good foreign outlet for surplus cottons. Coffee is strongly held, new crop selling on a basis of 10¾¢; old, 10¼¢. Cotton is quiet and barely steady. Hides and leather are weak. Lard is about steady. Wool is moderately active, and some qualities have advanced. Breadstuffs have an easier tendency, in sympathy with wheat; cables are generally less favorable. Provisions are barely steady. Tobacco is further advanced. Sugar is decidedly firm on a basis of 6⅝¢ @ 6¼¢ for raw. Petroleum steady, with moderate export demand. In freights there is little animation.

MINING STOCKS.

The closing prices for mining stocks were as follows:

	Bid.	Asked.
Amie	14	15
Alice	2.25	....
Bechtel	4	11
Bodie	....	75
Bassick	9.00	....
Barcelona	56	....
Bradshaw	20	25
Caled. B. H	....	1.00
Con. Imp	4	7
Con. Va	45	50
Chrysolite	....	1.25
Central Arizona	30	50
Cherokee	....	4
Durango	5	....
Dunkin	25	27
Decatur	2	4
Eureka Con	5.50	....
East. Or	39	....
Father de Smet	3.80	4.15
Great Eastern	1	....
Hukill	5	6
Horn Silver	7.00	....
Elko Con	9	11
Hortense	8	....
Hall Ander	1.10	1.15
Independence	....	50
Iron Silver	1.05	1.20
Leadville Con	30	....
L. Chief	80	....
Navajo	2.50	....
N. Standard	9	15
N. Belle Isle	....	50
Ori. & Mil	10	....
Pine Line cer	1.16	1.16⅞
Rappahannock	5	7
Robinson Con	39	41
Rising Sun	....	4
Red Elephant	....	6
Sierra Nev	....	4.00
Standard	5.62½	5.75
Silver Cliff	....	12
Sutro Tun	18	19
Sto mont	22	50
Sonora Con	27	....
Union Con	....	5.00
Unadilla	1	2
B. H. & E., n	½	⅞
Sierra Gr	1.10	1.15

GENERAL HARDWARE.

Business is going on quietly and evenly, the aggregate of sales amounting to a very respectable figure. The long, protracted drought is having the effect of limiting the production of many articles the manufacture of which is dependent on water-power, and many manufacturers, in such cases, are far behind their orders. Stocks in general are, however, sufficient.

The demand for Nails continues to be very good, and all the local dealers report increasing scarcity of leading sizes. Prices are firmly maintained at $3 ₱ keg, with the usual allowance for large lots. The attitude of the Western Nail manufacturers is regarded with great interest, as it is acknowledged that Eastern manufacturers are indebted to their Western brethern for the steadiness which has so long prevailed in the trade. It now seems probable that the East will be expected to co-operate with the West in restricting production, but there is quite a difference of opinion here as to the advisability of stopping the factories east of the Alleghenies for a month, in conformity with the action of the West. It could be done easily if stocks could be accumulated in anticipation of such a stoppage, but an accumulation cannot be made under existing circumstances, and perhaps not until the usual winter slackness of trade sets in. An early stoppage would undoubtedly result in empty warehouses within a very few days afterward.

The manufacturers of Cast Butts held a meeting at the Astor House to-day for the purpose of adopting uniform prices and putting an end to the irregularities which have of late characterized their business. The secretary has furnished us with the following list of the official quotations adopted by the meeting:

	Dis per cent.
Cast Narrow Fast Joint Butts, Drilled and Wire Jointed	40&10
Cast Broad Fast Joint Butts, Drilled and Wire Jointed	40&10
Cast Narrow Loose Joint Butts, Drilled and Wire Jointed	60
Cast Broad Loose Joint Butts, Drilled and Wire Jointed	60
Cast Parliament Butts, Drilled and Wire Jointed	60
Cast Mayer's Hinges, Drilled and Wire Jointed	50
Japanned Loose Joint Butts, without Acorns	60
Japanned Loose Joint Butts, with Japanned Tips	60
Japanned Loose Joint Butts, with Silvered Tips	60
Japanned Fast Joint Butts, without Acorns	40&10
Japanned Fast Joint Butts, with Japanned Tips	40&10
Japanned Fast Joint Butts, with Silvered Tips	40&10
Japanned Fast Joint Butts, Narrow	40&10
Figured Loose Pin Butts, with Tips	60
Figured Loose Pin Butts, with Japanned Tips	60
Figured Loose Pin Butts, with Silvered Tips	60
Japanned Parliament Butts, without Acorns	60
Japanned Parliament Butts, with Japanned Acorns	60
Japanned Parliament Butts, with Silvered Acorns	60

We regret to announce the death of George R. Hand, of the Hawley Bros. Hardware Company, of New York and San Francisco, after being connected for 20 years with the New York branch of the house. We are enabled to bear testimony to his superior qualifications as an upright business man, always reliable in places of responsibility, and one who had a very large circle of warm friends throughout the Hardware trade. His sickness was only for a few days, he having been attacked about a week ago with billious colic, which proved fatal. His funeral was held on Monday last at his residence, 270 Throop avenue, Brooklyn, and was very largely attended, many of his friends in the trade being present. His body was taken on Tuesday to Port Jefferson, L. I., for interment.

The Crystal Plate Glass Company, of St. Louis, under date of the 20th inst., announce that they must decline all orders, of whatever size, for shipment in less than 30 days after receipt.

Owing to several misapprehensions which have occurred recently, we are requested to remind the trade that the Philadelphia Screw Company, Limited, is an incorporated company, doing business under the above name, and that there is no other Screw company of that name; neither have they any connection with any other Screw company in Philadelphia or elsewhere.

The manufacturers of Cordage have adopted a revised price list, under date of the 23d inst., showing an advance of ½ cent per pound on Manila. The following are the present prices, subject to the regular trade discount of 1 cent per pound:

	Cts. per lb.
Manila Rope.	
1¼-inch cir. and upward	16
12 thread, or ¾ inch diameter	16½
6 & 9 thread, or ¼ and 5-16 inch diameter	17
Hay Rope, 2, 3, 4 or 5 thread	16
Bolt and Point Rope	17½
Tarred Rope and Lath Yarn	15½
Stave, Leather and Hop Twine	16½
Sisal Rope.	
1¼ inch cir. and upward	10½
12 thread, or ¾ inch diameter	11
6 & 9 thread, or ¼ and 5 16 inch diameter	11½
Hay Rope, 2, 3, 4 or 5 thread	10½
Tarred Rope and Lath Yarn	10
Russia Hemp.	
White Rope	17
Tarred Rope and Ratline	11
Spun Yarn	10½
Bolt Rope	18
Marline, Houseline, Rounding and Hambroline	15
Packing	16
American Hemp.	
White Rope	18
Tarred Rope and Ratline	12½
Spun Yarn	13
Lath Yarn	12½
Packing	17
Marline, Houseline, Rounding and Hambroline	16
Sash and Bell Cord	25 to 35

In the advertisement on page 43 of the Kilbourne & Jacobs Mfg. Company, of Columbus, Ohio, will be seen the illustration and description of the Columbus Wrought-Steel Sink, which is intended to take the place of the ordinary cast-iron sinks, over which it possesses the important advantages of superior lightness, strength and durability, the whole article being stamped from one plate of steel. The following are the list prices and discounts to the trade:

Painted.	Each.	*Galvanized.*	Each.
16 x 24 x 6	$1.80	16 x 24 x 6	$4.00
18 x 30 x 6	2.50	18 x 30 x 6	5.10
18 x 36 x 6	3.00	18 x 36 x 6	6.50
20 x 30 x 6	3.00	20 x 30 x 6	6 25
20 x 36 x 6	3.70	20 x 36 x 6	7.75
20 x 40 x 6	4.00	20 x 40 x 6	8.50
20 % discount.		30 % discount.	

F. W. Moss, No. 80 John street, New York, issues the following circular and price list:

I beg to call your special attention to annexed quotation of prices of "Moss & Gamble's" warranted Solid Cast-Steel Hammers, &c. The recent change in the tariff enables me to offer these justly celebrated goods at greatly reduced prices, which approximate nearly to those of a similar class of American manufacture.

Their durability, soundness and superior shape and finish have caused them to hold the front rank in the principal markets of the world for the past 25 years, and in this market during that time they have commanded from 50 to 100 per cent. higher prices than have the best American makes.

I confidently anticipate, therefore, that my friends will avail themselves of the present opportunity of laying in a stock of "Moss & Gamble's" Hammers, Sledges and Blacksmith's Tools, at the extremely low prices at which they are now offered.

PRICE LIST OF MOSS & GAMBLE'S WARRANTED SOLID CAST-STEEL HAMMERS, ETC.

Machinists' Hammers, Hand or Chipping, Ball Straight or Cross Pein, Riveting Hammers, &c.

1¼ lbs. each	at	$6.75	net per doz
1½ " "	at	8.25	" "
1¾ " "	at	9.50	" "
2 " "	at	11.00	" "
2½ " "	at	13 50	" "
3 " "	at	16.50	" "

Solid Cast-Steel Sledges, Flogging or Plying Hammers, &c ..... at 35 cents per lb. net
Solid Cast-Steel Blacksmith's Tools, at 35 cents per lb. net
Terms, cash in 30 days from date of invoice.

The French window glass trade in this market is somewhat affected by the wages question now agitated in Pittsburgh. Prices, in consequence, are nominal and irregular. One large house quotes discounts 70, 10 and 5; another, 70 and 10, and on a large consignment now due the discount will probably be 70. As the dealers say, they have "a corner in it" during the stoppage of the Pittsburgh works.

Among our "Special Notices" this week is one signed "Factory," for a salesman and general manager. Although the advertisers do not wish their names given, we will say that they are well known to the Hardware trade.

We have great pleasure in printing the following announcement, and would call special attention to the point made of the value of buckets and casks as a means of quelling fires before they have passed beyond control:

To Our Customers and the Trade: The Penfield Block Company, Lockport, N. Y., desire to state that their loss sustained by the recent fire immediately adjoining their works was not of such a nature as to retard the prompt filling of all orders. They also wish to state, for the benefit of the general public, that this is the second time their works have apparently been saved from destruction by fire by the use of pails and casks filled with water, which were ready to be used at the critical moment—demonstrating that "a stitch in time saves nine."

IRON.

American Pig.—Trade is generally very dull, yet in some quarters we hear of transactions of considerable magnitude. Some 4000 tons of American Bessemer have been sold at private terms—understood to be below $20 at furnace. A lot of 1000 tons of No. 2 Foundry was placed at $20 at tidewater. Other transactions have been of the usual hand-to-mouth character. There is plenty of Iron of all grades offering, but buyers appear to be indifferent about stocking up. Sellers do not, as a rule, make concessions, being convinced that in the present temper of the trade lower prices will not induce buying. Production is not now, it is asserted, in excess of consumption, and the daily purchases being made prevent stocks from growing larger. While the stocks already in existence on furnace banks seem very large, this is plainly the result of the policy of buyers in letting furnacemen carry their supplies. It is firmly believed by many that if the stocks now in makers' hands were distributed among consumers in proportion to their wants, it would be found that no one would have an excessive supply. In the present condition of trade, however, there seems to be no hope that consumers generally will make a change in their mode of buying, although a greater volume of business is confidently looked for in October than has been done in the month now closing. We continue to quote No. 1 Foundry at $22 @ $22.50, with sales of special brands at $23; No. 2 Foundry, $19 @ $20.50; Gray Forge, $18.30 @ $19. Outside lots can occasionally be had at less than these figures. The following prices for 100-ton lots of Pig Iron, immediate delivery, for cash, are quoted us by furnace sales agents, lighterage in New York harbor being 60¢ ℔ ton, which should be added to Hoboken or other tidewater prices:

NO. 1 FOUNDRY.	
Hudson (free of lighterage at New York)	$22.75
Carbon (Elizabethport delivery)	22.00
Thomas (Hoboken delivery)	22.00
Manhattan (tidewater)	23.00
Bushong (tidewater)	23 00
Olcott (at furnace, Albany)	22.00
Lehigh (tidewater)	23.00
Coplay (tidewater)	22.50
Warwick (tidewater)	22.00
GRAY FORGE.	
Durham (tidewater)	$18.75
Pequest (tidewater)	18.75
Sterling (tidewater)	18.10
Musconetcong (tidewater)	19.00

Scotch Pig.—There is very little doing. Importations are falling off, and what is arriving is coming to the legitimate trade. Freights are up 1/6, and prices are a little firmer in consequence, though we make but slight changes in quotations, which are as follows: Coltness, $23.25 from ship; Summerlee, $22.50 to arrive, and $23 from ship; Shotts, $23 @ $23.25 from ship; Langloan, $23.25 from ship; Gartsherrie, $23 @ $23.50 from yard; Glengarnock, $22 from ship, and $22.50 @ $23 from store; Carnbroe, $22 from ship, and $22.50 from store; Dalmellington, $21 from ship, and $21.50 from store.

English Pig.—There are no transactions to report in Bessemer, partly in consequence of Steel makers manufacturing greater quantities of Pig Iron themselves, and partly because American Bessemer can evidently be had as cheap and cheaper than English. A little demand is expected, however, from those Steel makers who prefer to use foreign Iron as a mixture with domestic brands. No transactions in Middlesboro' Pig have been reported, and, for the present, trade in that article appears to have ceased.

Spiegeleisen.—We hear of offers at $30.25 @ $30.50 for 20 %, though most dealers are firm at $31. A sale of 1000 tons is reported on private terms.

Bar Iron.—Although not so much business is being done as dealers would like, there is a fair trade nevertheless, and daily sales of small quantities make a very respectable showing for the week. Prices are unchanged, Refined Iron being nominally $2.30 @ $2.40 from store and $2 @ $2.20 from mill, with some shading on desirable specifications, while Common Iron is held more firmly at $2.10 @ $2.20 from store, and $1.75 @ $1.80 from mill.

Structural and Shaped Iron.—There is apparently nothing to complain of. The demand is steady and prices are well held. Quotations are as follows: Beams, 3.5¢ on wharf, for round lots; Angles, 2.6¢ @ 2.7¢ from store; Tees, 3.5¢ from store.

Plate Iron.—Business is quiet and prices are weaker. There is no quotable change, however, and the range is about as follows: Common, 2.6¢ @ 2.75¢; Refined, 2.75¢ @ 3¢; Shell, 3⅛¢ @ 3¼¢; Flange, 4⅛¢ @ 4¼¢; Extra Flange, 5¢ @ 5¼¢.

Sheet Iron.—There is a fair demand. Some mills are very full of orders, and are asking a little more money, while other mills are apparently able to turn out more than they are now making, and are seeking orders. We therefore continue our quotations, which will be found in our New York Wholesale Price List. The price of Russia Sheet Iron has been reduced.

Steel.—Dealers generally report trade in good condition. There is a steady demand, and consumers seem to realize that prices are at bottom. Prices of Steel certainly were never so low in this country as they are to-day. There is a tendency among large consumers to contract ahead, but manufacturers hesitate to fix prices for the future on the present low plane. The demand for English Steel is not so good as for American, owing to the increasing advantages offered by American makers in the way of price and the prompt filling of orders and rectification of errors. We quote American Tool Steel, 11¢, with concessions for desirable orders; Crucible Machinery, 6½¢ @ 7¢; Bessemer and Open-Hearth Machinery, 4¢ @ 5¢; Homogeneous Steel Plates, 5¢ @ 7¢, according to size; English Tool Steel, 15½¢.

Wire Rods.—There is no movement in Steel Rods, and at present the indications are against the probability of anything of consequence being done soon in this line, as Wire mills are curtailing production or stopping entirely in consequence of unremunerative prices. Iron Wire Rods, however, are looking up, as the Treasury Department has at last decided what duty they shall pay. The decision being in favor of the lowest rate—namely, $\frac{6}{10}$¢ ℔ lb—there is a good opportunity for importers to do a thriving trade, of which they are ready to take advantage. Negotiations for considerable lots of Iron Rods are in progress.

Steel Rails.—During the week sales of Rails have been made in small quantities, but the large orders which have been talked of for so long a time are still withheld. We quote $37 @ $38 at mills in Eastern Pennsylvania.

Old Material.—Not much business has been done, and prices show very little change. Transactions have been reported of 100 tons Light Iron from yard at $17, and other parcels at $16.50; 100 tons No. 1 Wrought from yard at $24.50; 300 tons Old T Rails on private terms. The arrivals of Scrap from the other side of the Atlantic during the past week have been unusually large, but they had evidently been mainly sold to arrive, and they caused no stir in the market. Owing to higher freights, No. 1 Wrought Scrap is held more firmly in Europe, and $24 is asked for shipment, although $22 is quoted for lots ex-ship. Bridge Rails are scarce, and $25 per gross ton is asked. Quotations for Double Heads are $25.75. Old Railway Leaf Spring Steel cannot be imported under $26.75, although a lot to arrive early may have been pressed on the market at a lower figure. American T's are still held at $23 @ $23.50, but it is stated that sales have been made at a considerably lower price.

TRANSACTIONS ON THE METAL EXCHANGE.

We are reported the following transactions on the Metal Exchange during the past week, ending at noon on Wednesday:

THURSDAY, September 20.
No transactions.

FRIDAY, September 21.
25 tons Straits Tin, Sept.-Oct. ship ..... .20⅞

SATURDAY, September 22.
No transactions.

MONDAY, September 24.

100 tons	American Pig, No. 1,	Feb		$21.37½
100 "	"	"	"	21.37½
20 "	Carbon	"	spot	20.00
10 "	Straits Tin,	Oct.		.21
10 "	"	"		.21
25 "	"	"	Aug.-Sept. ship	.21

TUESDAY, September 25.

25 tons	Straits Tin,	Sept.-Oct. ship	.21
25 "	"	" spot	.21

WEDNESDAY, September 26.—First call.
25 tons Straits Tin, Oct 21.1

The above transactions in Iron aggregated only 400 tons. It will be observed that among these transactions the sale is recorded of 200 tons of Carbon No. 1 at $20. This sale, having been at such an exceptionally low figure, has attracted much attention, and it has quite a history. It is the first case which has happened on the Metal Exchange of a delivery of Iron sold there. It appears that some months ago the agents in this city of the Carbon Iron and Pipe Company supplied a pig-iron dealer with 1000 tons of No. 1 Iron to sell. A few days afterward he reported having sold 200 tons on the Exchange for September delivery at $22. The purchaser was a member of the Exchange, but not connected with the Iron trade in any other way. As the time approached for him to receive the Iron, he became uneasy and endeavored to sell it, but received no offers above $21, which he refused to take. He then endeavored to get his fellow members to relieve him of his unwelcome burden, and they made efforts to do so in various directions. Although the Iron had been very carefully selected at the furnace, and was an excellent, and indeed very choice, lot, passing the inspector of the Exchange with no trouble, yet there seemed to be a feeling against purchasing it in this way. There was evidently a belief that this Iron should be sold for spot cash, and, owing to that fact, and also to the fact that it had been offered on the Exchange instead of by regular selling agents, buyers were naturally suspicious. Although there was no doubt of the quality of the Iron, the company could not be held in case of any complaint, as it had completely passed out of the agents' hands. It could find no buyers outside of the Exchange at any price, apparently, and finally the dealer who had sold it bought it back again at $20, and the speculative purchaser lost the difference.

Rules of the New York Metal Brokers' Association.

The following are the rules of the Metal Brokers' Association, which will in future govern the business of members:

RULES.

1. *a* The regular brokerages are and shall be: ½ per cent. on pig lead, spelter, tin plates, copper in ingots, bars and cakes, and tin in slabs, ingots and bars.

b. One per cent. on pig iron, merchant bar iron, spiegeleisen, ferromanganese, new and old rails, crop ends, scrap iron and old metals generally, and upon copper ores and matte.

c. Not less than 10 cents per ton on iron ores.

d. Not less than 1 per cent. on other forms of iron, steel and other metals not herein specified.

e. Not less than 2½ per cent. on railway material and supplies generally, except on articles otherwise named and rated in this rule.

2. Members may waive their regular brokerages, or any part of them, on re-sales by them of merchandise, on the primary sales of which they have made, or are to receive, full brokerages, *only* when the purchases and re-sales are coincident.

3. Members may effect exchanges of merchandise between their principals provided they receive not less than one regular brokerage thereon, which is to be paid, one-half by each of the principals (buyer and seller), or wholly by either one of them, as may be agreed upon at the time of such exchange.

4. Two members representing respectively a seller and a buyer in the same transaction shall divide the regular brokerage equally between themselves, unless otherwise agreed. In such transactions the broker representing the seller shall draw the contracts or sale-notes and shall collect the brokerage. Should the broker representing the buyer desire it, his name shall appear upon the sale-notes.

5. There shall be no division of brokerage by members, with their buyers or sellers, either as firms or individuals, except as provided in Rules 2 and 3.

6. Brokerage shall be payable by and collectible from the seller in all cases, unless otherwise agreed upon by the parties to a particular transaction, and in such cases unusual conditions as to the payment of brokerage shall be embodied in the contract or sale-note.

7. Members may do business with metal brokers in other localities than New York, subject to the rules of this organization.

8. This association recognizes as New York metal brokers those only who are members of it.

METALS.

Copper.—Although business in general, and in the metal trade in particular, is duller again, perhaps influenced by heavy failures in other branches, Copper continues to gain in firmness, but not in activity. Week's sales do not exceed 100,000 lb Lake at 15¼¢, while other brands are worth 14¼¢ @ 14¾¢. London cabled yesterday Best Selected, £68. 10/, and Chili Bars, £63. 10/, while we are cabled this afternoon from there to the following effect: "Market weaker. Best Selected, £68. 10/, @ £69, and Chili Bars, £63. 5/ @ £63. 10/." Manufactures may be quoted as under: Bottoms, 24¢; Braziers, 24¢; Sheathing, 22¢, and Bolt Copper, 24¢.

Tin.—London has been tending upward once more, and came this morning £95. 10/, Straits Tin, spot, and Singapore £95, cost and freight per steam this way. The cable dispatch adds that the shipments from Australia to England this month are estimated to reach 900 tons, and next month 1000 tons. The better London quotations have not influenced large lines of Straits, which remain 21⅛¢, but they have caused jobbing lots to advance to 21⅜¢ @ 21½¢; L. and F., 22⅜¢. Our own cablegram from London reads as follows: "Market firm and prices higher. Straits Ingot, spot, £95. 10/ @ £96, and futures £95. 10/ @ £96. 5/. *Tin Plates*—Remain quiet, and not up to expectations of dealers at this season. We quote large lines, ordinary brands, ℔ box: Charcoal Bright, $5.62 @ $6; do. Ternes, $5.12½ @ $5.37½; Coke Tin, $5.05 @ $5.15, and do. Ternes, $4.75 @ $4.87½. From London we are told to-day per cable that the market is unchanged. Liverpool is steady at 16/ for Coke Tin, and 18/6 @ 20/ for Charcoal.

Lead.—The market here remains in a condition of apathy at a time when it should be brisk; perhaps October will make amends for this disappointment. At any rate, sales for the week have been restricted to a paltry 100 tons Common at $4.32½, the closing quotation being nominally $4 32½ @ $4.35, Common Domestic, and $4.35 for Refined. What activity there is anywhere is limited to the two great centers of distribution in the West, St. Louis and Chicago, where the price of the metal is sustained by main force; but for this it would be nowhere. The general tendency in the country remains downward. At St. Louis 600 tons Corroding sold at $4.05, but Hard cannot be quoted there over $3.95 @ $4. From London we are cabled this afternoon that there is no change in the market. Manufactures are quoted as follows: Lead Pipe, 6¾¢; Sheet Lead, 7½¢; Tin-lined Lead Pipe, 15¢ ℔ lb, and Block-Tin Pipe, 45¢, less the usual discount to dealers.

Spelter and Zinc.—In spite of the improved feeling in Common Domestic Spelter, the demand does not fully develop yet, and holders cannot, in consequence, get above 4½¢ for the same. Silesian is nominally worth 5⅛¢. We quote Bertha Refined, 7¾¢ @ 8¢, and Bergenport, 9½¢. *Sheet Zinc* is moderately active and featureless at 6¢ @ 6⅛¢. We are wired to-day from London: "Market steadier and quotations higher. Ordinary at shipping ports, £15. 5/ @ £15. 7/6."

Antimony.—The market has developed no new features; we quote Hallett, 9⅛¢, and Cookson, 10¼¢.

EXPORTS

Of Hardware, Iron, Machinery, Metals, &c., from the Port of New York, for the week ending September 25, 1883.

	Quan.	Val.
Dutch West Indies.		
Sew. ma., cs..	2	$58
Buckles, case.	1	25
Ptlm., gals....	100	16
Bremen.		
Ptm.,gls..1,321,524		98,885
Mf. iron,pkgs.	15	420
Mach'y, pkge.	1	150
Tubing, case..	1	125
Tin plates, cs.	10	40
Hdw., pkgs...	66	1,693
Ag. imp.,pkgs	17	186
Christiania.		
Ptlm., gals.162,571		11,989
Sew. ma., cs..	2	75
Hdw., cs.....	123	1,846
Hamburg.		
Copper, bars..	9	200
Sew. ma., cs..1293		20,080
Mach'y, pkgs.	16	4,540
Ptlm., gals.570,250		44,300
Copper, bbls..	14	2,800
Clocks, pkgs..	64	1,597
Ag. imp., pkgs	166	2,047
Copper, pigs..	130	3,100
Steam pump.	1	742
Hdw., pkgs...	2	125
Chains, pkgs.	5	335
Stettin.		
Ptlm., gals.285,256		21,133
Antwerp.		
Ptlm., gals.793,950		61,914
Mf iron,pkgs.	6	102
Mach'y, pkge.	1	49
Rotterdam.		
Hdw., pkgs...	19	574
Copper, bars.	191	3,820
Plumber's material, cs....	3	44
Copper, cakes	144	3,612
Mf. iron, pkgs	11	217
Clocks, pkgs..	3	51
Copper, cks..	46	13,818
Ptlm., gals.274,050		23,000
Sew. ma., cs..	453	8,307
Mach'y, pkgs.	6	260
Pumps, pkgs.	10	716
Copenhagen.		
Cop. plates, cs	43	5,359
Mach'y, pkgs.	27	270
Hdw., pkgs...	7	202
Ag. imp.,pkgs	2	136
Christiansand.		
Ptlm., gals.130,442		9.783
Elsinore.		
Ptlm., gals.167,661		12,400
Amsterdam.		
Ptlm., gals..73,446		56,500
Gibraltar.		
Ptm., gals...76,040		7,500
Exmouth.		
Naph., gls..139 220		9,460
London.		
Clocks, pkgs..	533	12,936
Firearms, cs..	4	455
Cartridges, cs	4	85
Sew. ma., cs..	732	10,167
Naph., gls.364,756		13,235
Mf. iron, pkgs	26	630
Scales, cs.....	4	2,748
Saws, cs.....	5	363
Plumbers' material, case..	1	90
Hdw., pkgs...	248	6,373
Mach'y, pkgs.	38	1,740
Pumps, pkgs.	19	561
Chains, case .	1	75
Ag. imp.,pkgs	4	177
L. wheels, cs..	2	200
H. nails, cs...	13	420
Iron safes....	2	900
Ptlm., gals.509,600		43,060
Liverpool.		
Ptlm., gals.466,780		41,260
Ag.imp.,pkgs.	60	1,814
Tubes, bdls..	294	1,102
Clocks, cs.....	152	3,245
Pumps, pkgs.	7	481
Metals, cs.....	6	450
Hdw., pkgs...	14	838
Iron safe.....	1	25
Mach'y, pkgs	7	965
Iron rolls, cs..	118	4,500
Guns, case....	1	120
Mf. iron, pkgs	9	200
Nckl. plts., cse	1	150
W. mills, pkgs	2	250
Chains, case...	1	600
Sew. ma., cs..	85	1,596
Ox. zinc, bbls.	6	30
Copper, bars..	154	7,000
Needles, case..	1	305
Copper mat.. bags.....2311		30,000
Glasgow.		
Hdw., pkgs..	18	364
Mach'y, pkgs.	15	578
Zinc, bbls. ...	20	115
Pumps, pkgs.	3	14
Ag. imp.,pkgs	248	1,615
Sew. ma., cs..	551	8,676
Mf. iron, pkgs	69	2,500
Bristol.		
Ptlm., gals.208,250		17,847
Nova Scotia.		
Ptm., gals....4000		400
British Australia.		
Mf. iron, pkgs.	263	4,776
Clocks, pkgs..	257	5,437
Ptlm., gals..20,000		3,156
Saws, cs.....	6	485
Cutlery, cs...	14	182
Tacks, cs.....	20	353
Sew. ma., cs..	355	6,870
Nails, cs.....	10	86
Wringers, cs..	4	89
Fire-arms, cs..	2	236
Casters, cs...	2	48
Scales, cs.....	96	1,714
Bells, cs.	3	57
Mach'y, pkgs.	179	25,947
Ag. imp., pkgs	53	906
Pumps, pkgs..	62	3,460
Cartridges, cs	5	53
Metal, pkgs...	2	105
Windmill.....	1	1,335
S. rollers, cs..	6	200
Br. goods, cs.	8	386
Hdw., pkgs...	883	22,051
British West Indies.		
Nails, kegs...	217	821
Clocks, cs....	4	118
Anchors.....	8	46
Cop. wire, case	1	40
Cartridges, cs	2	85
Ptlm., gals..44,079		4,605
Mf. iron, pkgs	12	194
Mach'y, pkgs.	5	343
Scales, case....	1	30
Pumps, pkgs.	8	80
Hdw., pkgs...	56	630
Sew. ma., cs..	13	248
Hull.		
Hdw., pkgs...	222	2,680
Clocks, pkgs..	53	1,138
Pumps, pkgs.	8	747
Ag. imp.,pkgs	5	338
Canada.		
Tin plate,bxs.	500	1,830
British East Indies.		
Ptlm.,gls.1,099,840		107,365
New Brunswick.		
Iron ore, tons.	114	570
British Guiana.		
Hdw., cs.....	10	143
Clocks, cs.....	6	112
French Guiana.		
Gold mill, pcs.	473	12,000
Palma.		
Ag.imp.,pkgs.	6	55
Ptlm., gals.172,174		14,797
Havre.		
Ag. imp.,pkgs	28	2,794
Mf. iron,pkge.	1	35
Ptlm., gals.358,341		22,495
Copper, bars..	106	5,475
Mach'y pkgs..	9	1,958
Marseilles.		
Ptlm., gals.117,045		9,473
Les Sables D'Olonne		
Ptlm., gals.114,189		8,434
Bordeaux.		
Ptlm., gals.236,754		18,142
Alicante		
Ptlm., gals.180,000		16,500
Bilbao.		
Ptlm , gals.151,870		18,664
Spanish Possessions in Africa.		
Clocks, pkgs..	3	5,104
Revolvers, cs.	3	81
Ptlm, gals....10,000		970
Cuba.		
Mach'y, pkgs.	866	50,648
Mf. iron, pkgs	571	11,425
Scales.....	31	2,051
Cutlery, cs....	3	75
Cop. g'ds, cse.	1	35
Boiler.....	1	970
Scales, cs....	8	74
Ptlm., gals....	400	80
Iron kiln.....	1	2,150
Wire g'ds, cs.	4	160
Hdw., pkgs...	108	4,074
Nails, kegs...	313	924
Ag. imp.,pkgs	35	1,003
Clocks, cs.....	7	144
Iron pipe, pcs.	21	300
Sew. ma., cs..	16	242
Pumps, pkgs.	8	504
Spikes, kegs..	15	75
Iron, bdls.....	28	55
Wringers, cs..	2	25
Central America.		
Mach'y, pkgs.	8	800
Scale.....	1	25
Clocks, pkgs..	6	112
Cutlery, pkgs.	5	115
Ptlm , gals....	710	74
Cartridges,cse	1	25
Hdw., pkgs...	14	142
Sew. ma., cs..	6	115
Iron, pkgs....	57	177
Mf. iron, pkgs	14	1,019
China.		
Cartridges,cs.	1200	20,800
Hdw., cs.....	8	530
Ptlm., gals.400,000		36,570
Clocks, pkgs..	29	1,440
Scales, cse...	1	100
Arms, case...	1	81
Primers, cs...	10	1,000
Nails, kegs...	65	209
Ag.imp., pkgs	7	45
Porto Rico.		
Ptlm., gals..21,000		2,112
Pumps, pkgs..	3	157
Firecrackers, bxs.....	48	52
Mach'y, pkgs.	50	1,304
Ag. imp.,pkgs	12	365
Plumbers' material, csk..	1	41
Brass, cse....	1	72
Nails, kegs....	100	310
Safes.....	2	530
Hdw., pkgs..	49	609
Scales, cs.....	3	91
Cutlery, cs....	3	174
Steam pumps	2	5,150
Guns, case....	1	55
Sew ma., cs...	6	165
Medical apparatus, pkgs.	3	56
Clocks, cs....	6	254
Trieste.		
Sew. ma., cs..	101	756
Mexico.		
Mf. iron, pkgs.	225	2,031
Ptlm. gals..31,800		3,413
Cop. g'ds, cs..	3	218
Cartridges,cs.	40	585
Sew. mach, cs	63	2,672
Iron, bdls.....	46	114
Cutlery, cs....	3	45
Nails, pkgs. ..	2	31
Mach'y, pkgs.	155	8,013
Hdw., pkgs...	338	5,091
Boiler.....	1	1,124
Turbine.... ..	1	407
Ag. imp.,pkgs	24	998
Clocks, cs....	5	127
Tubing, pcs...	83	1,218
Nails, kegs...	232	707
Rifles, cs.....	9	1,107
Pistols, cs....	2	630
Genoa.		
Ptlm., gals.140,567		12,000
Smyrna.		
Ptlm. gals..190,000		17,575
Santo Domingo.		
Nails, kegs...	50	164
Hdw., pkgs...	51	1,242
Mach'y, pkgs.	24	1,159
Scale..... ..	1	150
Sew ma., cs..	2	41
Bath tubs, cs.	2	75
Pumps, pkgs.	2	41
Cutlery, cs....	4	91
Boilers..... ...	2	3,400
Scales, cs.....	7	125
Iron, pkgs....	210	847
Mf. iron, pkgs	482	2,046
Ptlm., gals....9950		1,105
Nails, bxs....	18	44
United States of Columbia.		
Mach'y, pkgs.	158	5,958
Fountain.....	1	370
Nails, kegs...	62	205
Clocks, cs.....	23	570
Cartridges, cs.	26	364
Nails, cs.....	6	95
Pumps, pkgs..	4	113
Ag. imp.,pkgs	29	355
Steel, pkgs...	9	143
Iron tanks... ..	2	570
Per. caps cse.	1	31
Locomotive ..	1	6,500
Cop. defectors	2	1,760
Cop. ware, cs.	3	144
Tin plate, cs..	10	90
Buckles, cs....	3	44
Hdw., pkgs...	184	3,781
Mf. iron, pkgs.	415	5,281
Ptlm., gals...9825		1,228
Sew. ma., cs..	170	4,825
Cutlery, cs. ..	67	2,007
Iron safes....	8	710
Revolvers, cse	1	38
Iron, pkgs....	223	510
Saws, cs.....	6	75
Lead, pkgs....	2	440
Scales, cs.....	20	350
Iron pipe, pcs.	42	200
W. mill..... ...	1	350
Shot cs.....	2	35
Needles, case.	1	140
Uruguay.		
Clocks, pkgs..	50	1,107
Iron g'ds,pkgs	3	75
Ptlm., gals..17,000		2,125
Iron safes....	2	310
Hdw., pkgs...	46	1,297
Mf. iron,pkgs.	9	47
Nails, pkgs. .	25	27
Pumps, pkgs..	3	75
Arms, cs	1	30
Ag. imp.,pkgs	196	1,110
Brazil.		
Hdw., pkgs....	152	2,284
Cartridges, cs.	4	140
Nails, kegs...	226	717
Cutlery, cs....	31	502
Pumps, pkgs..	6	112
Clocks, cs.....	53	537
Rifles, cs.....	2	72
Nails, bxs	68	336
Ptlm., gals.140,434		13,926
Scales, cs.....	40	107
Sew. ma., cs.	124	1,721

	Quan.	Val.
Mf. iron, pkgs	73	662
Ag. imp., pkgs	2	60
Iron safes	7	1,893
Hayti.		
Ptlm., gals.	1225	8,329
Nails, kegs	10	35
Pumps, pkgs.	3	88
Rifles, cse	1	45
Sew. ma., cs.	12	99
Venezuela.		
Clocks, cse	1	35
Sew. ma., cs.	26	215
Hdw., pkgs.	11	146
Nails, bxs.	5	49
Mf. iron, pkgs.	5	55
Ptlm., gals.	5454	552
Japan.		
Mf. iron, pkgs	3	60
Scales, cs.	2	90
Cartridges, cse	1	15
Mach'y, pkgs.	3	186
Boiler	1	315
New Zealand.		
Locks, cs.	4	199
Arabia.		
Ptlm., gals.	478,230	44,300
Fiume.		
Ptlm., gals.	776,381	49,950
Sandwich Islands.		
Locks, cs	4	229
Tacks, cs	7	210
Hong Kong.		
Hdw., pkge	1	39
Cartridges, cs.	3	60

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending Sept. 26, 1883.

Hardware.

Barbour Bros. & Co.
Machinery, box, 1
Boker Hermann & Co.
Hardware, cutlery and guns, pkgs., 74
Clark Mile End Co.
Mach'y, pkgs., 142
Dinglestedt & Co.
Case, 1
Drexel, Morgan & Co.
Arms, cs., 32
Field Alfred & Co.
Chains, cks., 8
Guns, cs., 7
Anvils, 15
Folsom Charles,
Arms, cs., 3
Folsom H. & D.
Arms, cs., 28
Fregay George,
Machinery, case, 1
Godfrey C. J.
Arms, cs., 3
Gorham Mfg. Co.
Case, 1
Graef Cutlery Co.
Cutlery, pkgs., 5
Hart Mfg. Co.
Mdse., cs., 3
Hartley & Graham,
Arms, cs., 4
Hayden Peter,
Packages, 2
Kimball T. & Co.
Machinery, case, 1
Mayer Robert & Co.
Machines, case, 1
Merch. Dis'g. Co.
Chains, cks., 12
Newell Universal Co.
Machinery, pkgs., 14
Peck, Stow & Wilcox Co.
Machinery, bxs., 4
Phelps & Nain,
Machinery, box, 1
Purtney Daniel,
Gun barrels, cs., 3
Rennel Furnishing Co.
Cases, 9
Sanderson & Son,
Horse nails, bxs., 3
Schoverling, Daly & Gales,
Arms, cs., 26
Mdse., cs., 19
Steen J.
Machinery, case, 1
Struller, Lau & Co.
Arms, cs., 4
Taylor Thos.
Mdse., cs., 2
Townsend M.
Machinery, case, 1
Wiebusch, Hilger & Co.
Hdw. and cutlery, pkgs, 25
Windmuller L. & Roelker,
Arms, cs., 8
Witte John G. & Bros.
Cutlery, cs., 3
Vom Cleff & Co.
Ironware, cs., 10
Order,
Gun barrels, cs., 9
Bicycles, cs., 4
Cases, 27
Casks, 5

Iron.

Baring Bros. & Co.
Wire rods, kgs., 257,250
Rods, pkgs., 10,386
Bars, 13,495
Rods, bdls., 7303
Rivet rods, coils, 1485
Cary & Moen,
Wire rods, coils, 276
Coddington T. B. & Co.
Sheets, bdls., 398
Crocker Bros.
Spiegel, tons, 271½
Dickerson, Van Dusen & Co.
Bundles, 50
Lang W. Bailey,
Bundles, 40
Lee James & Co.
Pig, tons, 100
Lundberg Gust.
Bars, 591
Bundles, 236
Lilienberg N.
Bars, 2168
McCoomb J. I.
Cotton ties, bdls., 4400
Mason John W. & Co.
Wire rope, coils, 12
Moore Bros.
Water pipes, 266
Naylor, Benzon & Co.
Rivet rods, coils, 669
Wire, coils, 579
Outerbridge A. E.
Bolts, case, 1
Page, Newell & Co.
C. iled wire, bales, 99
Pierson & Co.
Sheets, bdls., 520
Prosser Thos. & Sons,
Wrought tubes, bdls., 24
Stetson Geo. W.
Pig, tons, 300
Thurber H. K. & F. B. & Co.
Old tubes, lot
Williamson Jas. & Co.
Pig, tons, 300
Order,
Pig, tons, 350
Scrap, tons, 979
Scrap, lot
Bundles, 2086
Spiegel, tons, 1800
Ore, kg., 375,000
Plates, 51
Bells and bars, 136
Wire, coils, 315
Bars, 3460
Sheets, bdls., 500
Sheets, pkgs., 1500
Tubes, 4
Heavy wrought scrap, kg., 266,700
Old tubes, lot
Old horse shoes, tons, 134
Cotton ties, bdls., 964
Old iron, tons, 230

Steel.

Abbott Jere & Co.
Cases, 54
Packages, 2
Cary & Moen,
Casks, 23
Downing, Sheldon & Co.
Bundles, 155
Duvall H. R.
Cases, 2
Plates, 87
Hammacher A. & Co.
Wire, cs., 5
Sellers Wm. B.
Cases, 2
Seligman J. & W. & Co.
Rails, 171
Temple & Lockwood,
Pkgs. and pcs., 14
Wagner W. F.
Plates, 18
Bundles, 752
Bars, 187
Piece, 1
Cases, 21
Wolff R. H. & Co.
Steel band iron, case, 1
Order,
Rail ends, tons, 500
Wire rods, bdls., 254
Rails, 400
Packages, 394
Bands, 372
Rails, 2425
Casks, 31
Bundles, 570
Forgings, 4

Metals.

Alexandre F. & Sons,
Ore, pkgs., 197
Bank of Montreal,
Tin, bxs., 3853
Bruce & Cook,
Tin plates, bxs., 1702
Crooks Robert & Co.
Tin plates, bxs., 2820
Dickerson, Van Dusen & Co.
Tin plates, bxs., 10,494
Tin, bxs., 419
Erie & Pacific Dispatch,
Tin plates, bxs., 375
Field Alfred & Co.
Gun cans, cs., 10
Hollender Fred. R.
Metal wares, cs., 10
Ketchum E. & Co.
Tin, bxs., 298
Phelps, Dodge & Co.
Tin plates, bxs., 13,608
St. Louis Stamping Co.
Black plates, bxs., 168
Western Dispatch Co.
Tin plates, bxs., 1046
Tin plates, cs., 40
Western Transfer Co.
Tin plates, bxs., 535
Wheeler E. S.
Tin plates, bxs., 4068
Winter & Smillie,
Tin, ingots, 910
Order,
Spelter, plates, 4562
Tin plates, bxs, 32,823
Tin taggers, bxs., 220
Lead, pigs, 1578
Tin, slabs, 4644
Tin, ingots, 1525
Lead pipe, cks., 10
Spelter, ingots, 3403
Tin, bxs., 2651
Ventilators, 4

COAL.

In the Anthracite trade there is a large body of Coal moving off in a quiet way, but businesss among the wholesale dealers is not as active now as it was last month, and there is a feeling of disappointment. The lull, however, is believed to be temporary, as a cold snap would quicken orders for the domestic sizes. September ought to be the most active month, but October this year promises better. Prices remain unchanged, as follows:

FREE-BURNING STEAM COALS, F.O.B.

Lump.	Broken.	Chestnut.	Pea.
$3.90 @ 3.95	$3.90 @ 4.00	$4.50 @ 4.80	$2.85 @ 3.15

LEHIGH AND HARD WHITE ASH, F.O.B.

Lump.	Broken.	Chestnut.	Pea.
$4.90 @ 5.25	$4.35 @ 4.50	$4.50	$3.00

BITUMINOUS, ALONGSIDE.

Cumberland.	Clearfield.
$4.00 @ 4.25	$3.90 @ 4.00

Excepting some of the special Coals, the circular rates are not realized, and some sizes are in excess of demand. Bituminous is rather firmer. Reports of sales at very low rates, scarcely equal to the cost of production, are not verified. The Pottsville *Miners' Journal* says: "It is not likely that there will be a very lengthy suspension, if any, during the winter months. The collieries are now making their full capacities, and the demand remains equal to the supply." The Anthracite tonnage of the leading railroads in that trade last week amounted to 737,585 tons—an increase of 1130 tons, as compared with the corresponding week of 1882. These figures bring the tonnage for the year to date up to 21,248,846 tons, against 19,280,323 tons in the corresponding portion of 1882.

OLD METALS, PAPER STOCK, &c.

The purchasing prices offered by dealers are as follows:

Copper, heavy	₩ lb.	$0.12	@ .....
" light	"	.10½	@ .....
Copper Bottoms	"	.10	@ .....
Yellow Metal	"	.07⅛	@ .....
Brass, heavy	"	.09	@ .....
" light	"	.07	@ .....
Composition, heavy	"	.11	@ .11½
Lead, heavy	"	.04	@ .....
Tea Lead	"	.03½	@ .....
Zinc	"	.03	@ .....
Pewter, No. 1	"	.14	@ .....
" No. 2	"	.10	@ .....
Wrought Iron	₩ ton.	22.50	@ .....
Light "	"	12.00	@ 13 00
Stove Plate "	"	11.50	@ 12.00
Machinery "	"	14.50	@ 15.00
Grate Bars	"	4.50	@ .....
Stereotype Plates	₩ lb.	.04½	@ .05
Electrotype "	"	.04¼	@ .04½
Small Type	"	.05	@ .05

The prices current (prices paid by local dealers) for Rags, &c., are as follows:

Canvas, Linen	₩ lb.	3½c. @ 4 c.
White Cotton, New	"	3½c. @ .....
" No. 2	"	2½c. @ 2¾c.
White, No. 1	"	3¼c. @ 4 c.
" No. 2	"	1¾c. @ 2 c.
Seconds	"	½c. @ 1 c
Soft Woolens	"	5 c. @ 6 c.
Mixed Rags	"	1½c. @ 1¾c.
Gunny Bagging	"	1½c. @ .....
Jute Butts	"	1¼c. @ .....
Kentucky Bagging	"	..... @ 3¼c.
Book Stock	"	1¾c. @ 2 c.
Newspapers	"	1 c. @ .....
Waste Paper and Scraps	"	½c. @ .....
Kentucky Bale Rope	"	3½c. @ 4

FOREIGN TRADE MOVEMENTS.

Included in the imports for the week ending September 21 were leading articles of merchandise valued as follows:

	Pkges.	Value.
Antimony	35	$2,945
Antimony ore	150	1,220
Anvils	178	1,060
Brass goods	70	5,789
Bismuth	7	3,611
Bronzes	81	15,634
Chains and anchors	60	2,752
Clocks	166	18,430
Copper	...	386
Cutlery	139	53,929
Gas fixtures	2	753
Guns	106	24,774
Hardware	18	1,341
Iron, pig, tons	4,488	95,419
Iron, sheet, tons	71	4,470
Iron cotton ties	8,700	7,113
Iron, other, tons	613	28,275
Machinery	160	11,556
Metal goods	304	30,077
Nails	1	284
Needles	28	7,135
Old Metal	..	1,602
Platina	2	588
Percussion caps	14	2,303
Pins	26	1,543
Plumbago	1,282	16,235
Saddlery	24	3,304
Steel	44,523	60,281
Steel pens	5	4,625
Tin, bxs	64,918	3[illegible]9,530
Tin, slabs, 5,630; lbs., 531,757	.....	118,053
Wire	451	11,083

The importations of metals and hardware compare with previous dates as follows:

	For the week.	38 weeks of 1883.	Same time 1882.
Cutlery, pkgs	139	5,815	5,542
Hardware, pkgs	18	883	783
Iron, R. R., bars	....	10,642	83,247
Lead, pigs	.....	6,224	27,124
Steel, pkgs	445,283	2,392,852	1,491,302
Tin, bxs	64,918	1,527,486	1,689,492
Tin slabs, ₩	531,757	17,237,215	12,574,745

PHILADELPHIA.

Office of *The Iron Age*, 220 South Fourth St., PHILADELPHIA, Sept. 25, 1883.

Pig Iron.—The market still retains the features which have been prominently characteristic during the past six or eight weeks. Dullness and apathy seems to pervade nearly all departments, and while prices are not quotably lower, the tendency is undoubtedly in that direction. It is something unusual to find both buyers and sellers manifesting indifference to what transpires in the market, but such appears to be the case at present. The reason for this may probably be found in the recognition of the fact that only a limited business can be done in any event, and urging sales would weaken prices without increasing business. Consumers are equally cautious, taking only just what is required for temporary purposes, hoping that the next change may be in the direction of lower prices. The outlook seems to be as uncertain as ever, although it may be asserted with reasonable safety that whatever changes may be made will not for the present be of serious importance. Materially lower prices are out of the question unless cost of production can be cut down, and that, if done at all, will have to be a gradual process, and not likely to be accomplished without considerable difficulty. The chances of a movement in the opposite direction do not appear to require serious consideration at present. Notwithstanding the paucity of transactions, consumption has been maintained with considerable uniformity, and, so far as we can learn, supply and demand are very evenly balanced. A good deal of Southern Iron is being marketed among consumers at points hitherto supplied from local sources, however, and competition from the South is likely to increase rather than otherwise. Taking everything into consideration, therefore, there is no reason to suppose that prices can vary a great deal, although the chances are in favor of slightly easier figures. Sales during the week have been chiefly in small quantities, although inquiries and bids at low figures have been made for large lots of ordinary Iron. Sev transactions at $17.50 @ $18, delivered at tide, for Mill Irons, are reported to have been closed, in lots of 500 to 1000 tons each, subject to approval of quality. In a general way, sales have been in carload lots, and from that up to 200 to 300 tons, at figures ranging from $21.50 to $22.50 for No. 1 Foundry, $19.50 @ $20.50 for No. 2, and $18 @ $20 for Gray Forge, all delivered at tide-water, or its equivalent. Concessions would doubtless be granted on large orders, but in the absence of firm offers quotations are fairly steady as above named. Sales of American Bessemer have been made—one lot of 5000 tons, said to be at about $21, delivered in buyer's yard.

Foreign Iron.—Buyers of large lots seem to have left the market entirely. Two or three sales of special brands of Bessemer, in lots of 250 tons each, have been made at $21.50 @ $22 at tide, beyond which there is no demand. Spiegeleisen has sold in 1000-ton lots at $30.12½ @ $30.50, with bids for more at $30.37½.

Muck Bars.—The demand has been somewhat more active, and mills are sold close up at $34, f.o.b. cars, for best qualities.

Blooms.—Moderate demand at unchanged prices, viz.: Charcoal Blooms, $57 @ $58; Run-out Anthracite, $47.50 @ $49; Scrap Blooms, $42 @ $44; Northern Ore Blooms, $39.50 @ $41.50.

Bar Iron.—There is very little change to report, business being in all respects about the same as during the past two months. There is a good deal of complaining throughout the trade, both as regards price and demand, but the mills are kept hard at work on hand-to-mouth orders. There is no certainty as to the continuance of this class of business, however, so that there is a constant straining after a larger class of trade, leading in many cases to low quotations, without much increase in sales. The uncertainty in the outlook is the most discouraging feature the trade have to deal with; orders on hand could be closed out in two or three weeks, beyond which there is nothing definite upon which to base calculations. As far as regards the local trade, prospects are fairly encouraging, but there is no certainty in regard to the action of manufacturers in the West. Some competition is always expected, but in the meantime local manufacturers have been able to maintain prices with a fair degree of firmness. Small lots command about 2.2¢, but orders very desirable at to size and specification can be placed at lower figures, and Common Iron at prices varying from 1.85¢ upward, but there is very little demand for any but best Refined Iron.

Plate and Tank Iron.—Only a moderate demand can be reported, but the mills have plenty of work for the present, so that there is no anxiety for new business. The higher grades are a trifle easier to buy; all others steady and firm as last quoted, viz.: Tank Iron, 2.5¢; Boat Plate, 2.35¢ @ 2.4¢; Shell, 3¢ @ 3.25¢; Flange, 4¢ @ 4.25¢, and Fire-Box, 5¢ @ 5.5¢.

Structural Iron.—Nothing of importance has been closed, but two or three good-sized contracts will probably be given out before the close of the week. Manufacturers are actively at work on orders taken some time ago, and there seems to be a fair probability of a steady demand during the balance of the year. Prices are about as last quoted, viz.: Double-Refined Bars, 2.5¢; Bridge Plates, 2.5¢; Angles, 2.3¢ @ 2.4¢; Tees, 2.8¢ @ 3¢; Beams and Channels, 3.5¢.

Sheet Iron.—The demand for Thin Sheets continues without abatement, and orders for the high numbers are difficult to place. Stocks appear to be pretty well exhausted, and for some time to come it will be a matter of extreme difficulty to meet the demand promptly. Heavy Sheets are comparatively dull, and, while prices are nominally unchanged, the low numbers can be had on slightly easier terms. Small lots may be quoted about as follows:

Common Sheets, No. 28	4½¢
Common Sheets, Nos. 26 and 27	4¾¢
Common Sheets, Nos. 21 to 25	4¢
Common Sheets, Nos. 18 to 20	3¼¢

Best Refined, ¼ ¢ advance on the above.

Best Bloom Sheets, Nos. 26 to 28	6½¢
Best Bloom Sheets, Nos. 22 to 25	6¼¢
Best Bloom Sheets, Nos. 16 to 21	6 ¢
Common Red Plates, 3-16 to 16	2.7¢
Best Bloom, Galvanized, discount	40 %
Second quality, discount	50 %

Wrought Iron Pipe.—There is absolutely nothing of interest to report under this head. Weakness and irregularity in prices appear to be the principal feature of the Pipe market. The demand, however, is fairly good. We quote Boiler Tubes at, say, 60 % off list price, and Gas and Steam Pipe, at 70 and 5 % off, in an ordinary way, while on desirable orders a discount of 75 % could probably be obtained.

Steel Rails.—The amount of business actually closed has not been important, although inquiries have been numerous, particularly for light Rails. Sellers are holding prices pretty steady, and appear to be of opinion that $37 at mill should be an inside quotation. Firm offers for large lots do not appear to be made with much freedom, however, and there is an evident disposition on the part of buyers to move with extreme caution. For the present, therefore, business is held in abeyance as far as regards spring deliveries, current sales being for small lots for delivery within the next 60 days, at prices varying from $37.50 to $38, at mill, according to circumstances.

Old Rails.—A considerable amount of negotiating has been in progress, but, so far as known, not a single transaction has been closed during the week. There are sellers for shipment at $23.50 for Old T's, $24.50 for Bridges, and $26 for Double Heads, with buyers at $23 @ $24 for T's and Bridges. Spot lots would possibly command good prices, but there are none here at the moment.

Scrap Iron.—The market shows very little change, and, in fact, there is not much doing, except in carload lots, which command about $25. Small cargoes would probably command $23 @ $23.50, but, in the absence of sales, prices are purely nominal, although there is more inquiry.

Nails.—The demand for Nails continues active, which prevents an accumulation of stocks. Prices are steady at $3, with slight concessions on large orders.

Mr. John S. Hogan, for the past 13 years with Mr. David S. Cresswell, the well-known Iron founder, has commenced business as an Iron broker, with offices at 413 Walnut street. Mr. Hogan has a large acquaintance in the Iron trade, and will doubtless command a share of the brokerage business.

PITTSBURGH.

Office of *The Iron Age*, 77 Fourth Avenue, PITTSBURGH, PA., Sept. 25, 1883.

So far as the volume of business is concerned, there is no particular cause of complaint; the mills and furnaces here and in this immediate vicinity are nearly all in operation, some of them working up to their full capacity, but prices are unsatisfactory. Pittsburgh is making and shipping almost, if not quite, as much Iron and Steel as ever before. Our Steel-Rail mills are full up for this month and next; there is an active demand for Wrought-Iron Pipe; mills working on Bridge and Structural are pretty well supplied with orders, and the Merchant Iron trade, so far as demand is concerned, has been in worse condition many times within the past few years. Prices, however, are very low, as a rule, affording very little, if any, margin for profit, and so sharp is competition that it is impossible to get prices up. Manufacturers meet together every now and again to compare notes, and promise each other to stiffen prices, but fail to do so. The great trouble lies in the fact that they have little confidence in each other; but for this they could obtain better prices. Buyers often prevaricate, and frequently, in order to make a point, misrepresent one mill owner to another, alleging that a certain firm had offered to accept an order at a certain price, and soliciting a still lower rate, when, in fact, they had no such offer at all. Some mills positively refuse to sell at cut-throat rates, and whenever a firm is detected in taking an order at or below cost of production, it is at once inferred that there is a weakness somewhere; either that the firm in question are weak or that they do not understand their business.

Ores.—The market continues in an unsatisfactory condition, and the prospect is not bright for any immediate improvement. The Bessemer Ores are pretty well sold up, but of ordinary mill grades the supply is large and increasing. The low price of the home Ores has almost driven foreign Ores from American markets, particularly at interior points.

Pig Iron.—There has been an increased volume of business the past week, sales of between 5000 and 6000 tons having been reported, with negotiations pending for other lots, which will be closed within the next few days, and, while prices remain unchanged, the increased activity has developed a more confident feeling on the part of furnacemen, some of whom entertain hopes of being able to realize an advance of 50¢ @ $1 ₩ ton in the near future. However, consumers are in no mood to pay an advance. While admitting that the raw article affords the producer a very small margin, they argue that it is bringing fully as much, if not more, than the products, and that unless there is an improvement in the prices of the latter they cannot pay more for the former. It appears to be generally conceded, however, that the market has touched bottom. Furnacemen now in blast say that, rather than submit to any reduction, they will blow out after having filled existing engagements. The supply in first hands is small, as nearly all the furnaces in blast have had contracts sufficient to absorb their entire production, thereby preventing an accumulation. The outlook at the present writing warrants the belief that there will be a steady consumptive demand from now until the close of the year, and that there will not be much change in prices, which may be quoted as follows:

No. 1 Foundry	$21.00 @	$22.00,	4 mos.
No. 2 "	19.00 @	20.00,	4 "
Neutral Mill	17.50 @	18.00,	4 "
All-Ore Mill	19.00 @	20.00,	4 "
Warm-Blast Charcoal	24.00 @	27.00,	4 "
Cold " "	28.00 @	33.00,	4 "
Bessemer Iron	20.50 @	21.50,	4 "

Rumors prevail of some large sales of Bessemer, but particulars are withheld; they are believed, however, to have been on a basis of $20.50, 4 mos., which is as low as furnaces are willing to sell. We can report sales of some 3000 tons Neutral Mill at $17.50, cash, @ $18, 4 mos.

Muck Bar.—There has been no material change in the situation during the past week; business fair; prices unchanged at $33 @ $33.50, cash. We can report a sale of 1000 tons at $33, cash.

Manufactured Iron.—There is a fair degree of activity, and mills generally are fairly employed; some of them are pressed with orders, and the indications are that there will be a steady demand for all kinds of Finished Iron from now until the close of the year. The stock in hands of jobbers and large consumers is small, which will necessitate their buying more freely in consequence, and now that they are reasonably well assured that prices will go no lower, an increased business may be looked for. Prices are still quoted on a basis of 1.85¢ @ 1.9¢ for Bars; this is for assorted orders, 60 days, with usual discount of 2 % for cash.

Nails.—There has been but little change in the position of the market since our last report. At a special meeting of the Western Nail Association, a stoppage for 30 days was ordered, to commence on the 5th of November; action was also taken with a view to conferring with the Eastern Nail Association in regard to having the Eastern factories shut down for a time also. In view of this action a more confident feeling prevails. Prices remain unchanged; $2.70 @ $2.75, in car lots, and $2.85 @ $2.90 in smaller lots, 60 days, with usual discount of 2 % off for cash.

Wrought Iron Pipe.—The demand keeps up, but prices are no better. One of our largest manufacturers, in speaking of the situation, said he could not understand it; the demand has been active all fall; no trouble in obtaining orders, but at the prices there is no margin for profit. Some firms have withdrawn their traveling men and are still getting all they can do. Discounts remain unchanged at 70 and 10 @ 75 % on Gas and Steam Pipe, and 57½ @ 60 % on Boiler Tubes; Oil Well Casing is quoted at 43¢ @ 45¢ ₩ foot, net; do. Tubing, 14¢ @ 15¢, net.

Old Rails.—There is a continued demand for immediate delivery, with but few offering. Prices are firm, but unchanged. American Tees may be quoted at $24 @ $24.50. So far as known, there have been no sales above our inside quotation, but brokers intimate that they could obtain $24.50 for immediate delivery.

Steel Rails.—Mills here have all they can do for this month and next, but are open for November and December contracts; we are reliably informed that it would be impossible to place an order here for delivery this side of November. Sales, it is said, have been made elsewhere for delivery in 1884.

Railway Track Supplies.—There is a fair business at unchanged prices. Railway Spikes, 2.6¢, 30 days; Splice Bars, 1.9¢ @ 2¢; Track Bolts, 3¢ @ 3¼¢.

Steel.—The Merchant Steel trade continues slow for the season, and prices are weak and irregular. Standard brands Refined Cast Steel, 11¢ @ 12¢ ₩ lb; Crucible Machinery, 6¢ @ 7¢; Bessemer and Open-hearth do., 4½¢ @ 5¢; Steel Boiler Plate, 6¢ @ 6¼¢. Very few Iron boilers are being made, Steel having almost entirely taken the place of Iron for that purpose.

Crop Ends.—No sales reported for several months, in the absence of which it is impossible to give reliable quotations.

Scrap.—There has been little or no change in prices during the week and business continues quiet. Wrought Scrap, $20 @ $23, net ton, outside figure for Selected Railway; Old Car Axles, $32 @ $33; Old Car Wheels, $19 @ $20, gross; Cast Borings, $13 @ $14, gross.

Window Glass.—No settlement yet of the wage question, and, as the factories have been stopped for three months, stocks are very much reduced, and manufacturers have great trouble in filling orders. Discounts are still quoted at 60 and 20 % on Single and 70 and 10 % on Double Strength.

Coke.—There is an increasing demand, and operators are now beginning to complain of a scarcity of cars; the shipments both East and West are increasing. Prices remain unchanged, but operators are refusing to sell beyond 30 days. We continue to quote at $1 @ $1.10 ₩ ton, free on cars at ovens.

CHICAGO.

Office of *The Iron Age*, 36 and 38 Clark St., Cor. Lake St., CHICAGO, Sept. 24, 1883.

Hardware.—The favorable conditions of a week ago have continued in the Hardware trade. Jobbers are busy filling orders for Shelf and Heavy Hardware, many of which are made up largely of goods which are not in frequent demand, but kept to fill up the stock in a country retail store. There has been more of this class of trade during the week than for some time previous. Buyers are placing well-assorted orders, carefully confining themselves to the smallest possible amount of goods that will cover their necessities. They seem to have very little confidence in present prices, disregard the firmness at which goods are held, and are not influenced by the indications of higher figures being placed on the whole line of Hardware. Dealers do not anticipate a "boom" in that direction. The market throughout is fairly active and satisfactory to the majority of the trade.

Nails.—There is no change in the demand for Nails, which has been quite active for several weeks. Jobbers are seeking to place orders somewhat in excess of their immediate requirements, in anticipation of the limited supply and its consequences in case Western manufacturers suspend, as was determined last week. In doing this there is considerable difficulty encountered. Manufacturers are not desirous of loading themselves with orders at present prices, while the jobbers are endeavoring to have them meet their demand at a still lower rate. The result of the recent announcement is being watched with much anxiety by consumers, and a change in price is liable to occur at any time. It has had the effect of stiffening up the price on carload lots from $2.85, which was accepted last week, to $2.90, which is now quoted as firm. Smaller orders are placed at $3 ₩ keg. The market is very feverish, and stocks on hand very light.

American Pig.—The market for Pig Iron has been rather quiet during the past week. There are considerable inquiries by cash buyers for odd lots, most of which have been bought up recently at prices below the regular market value. The field having been pretty well cleared of these job lots, buyers have been tempting dealers with offers from 50¢ to $1 ₩ ton less than asking price for standard brands, with indifferent success. The tone of the market is better than it has been for several weeks, though there has been very little Iron sold. Lake Superior Charcoal, Nos. 1 and 2, is held at $23, and No. 3, for Car-wheels, at $23.50; No. 4 is largely used by Malleable Iron manufacturers and is scarce at $25, while Nos. 5 and 6 are held at $24; Lake Superior Coke is quoted at $24; Lake Superior and Cinder at $22.50; Lake Superior and Ohio Ores at $22 @ $22.50; Ohio Standard Black Band, No. 1, $24 @ $26; Southern, No. 1, at $23, and No. 2 at $21; Silvery Soft at $20 @ $22; Anthracite, No. 1, at $22, and No. 2 at $21; Southern Irons are scarce, and for this reason only does No. 1 command a higher figure than No. 2. Consumers are holding off and continue to supply their wants in small lots. There are, however, numerous large buyers who are expected to come into the market shortly to lay in their winter supply.

Scotch Pig.—There have been several inquiries for Scotch Pig, but the market is very weak and dull. We nominally quote Glengarnock at $27, and Summerlee at $28, for carload lots.

Merchant Steel.—Trade in Merchant Steel continues quiet, with very little to encourage the feelings of the dealer. Concessions are unhesitatingly made, and prices have suffered severely. The fall trade is regarded as extremely backward, and orders very light. An improvement is looked for within the next few weeks, as by that time the prospects of implement manufacturers will be more clearly defined.

Steel Rails.—Nothing has transpired since our last in the Steel Rail market worthy of mention. There are a few floating inquiries, but no disposition to buy in quantity. We quote, nominally, at $40 ₩ ton.

Bar Iron.—The demand for Bar Iron is fairly good. There appears to be an improvement in the feeling regarding this trade. It is asserted that consumers display more confidence in prices and are buying a little more liberally within the past week or two. The prospect is that present figures will continue to be maintained, and that the demand consequent upon the season will bring the market into firm position for the balance of the year.

Builders' Iron.—Structural Iron is called for freely, and in volume the business is on a fair footing with other branches. The weather is all that could be wished for, and builders are pushing their contracts with

much rapidity. Prices remain unchanged, as follows: Angles, 2.9¢; Beams, 3.6¢, and Channels, 3.6¢ @ 3.8¢, according to the order.

Sheet Iron.—There is a fair demand for Sheet Iron, both in Black Sheet and Galvanized. Prices are firm, with no indications of any immediate change.

Scrap Iron.—Market quiet and not much offering. We quote, as dealers' purchasing prices, for No. 1 Wrought Scrap, ₱ net ton, $17; No. 1 Cast Scrap, ₱ ton, $15; No. 1 Stove Plate Scrap, ₱ ton, $10; Machine Shop Wrought Turnings, ₱ ton, $9; Cast Iron Borings, $7; Old Plows and Plow Steel, $10; Malleable Scrap, $5.

EVERETT & POST, 156 Lake street, Chicago, report to us as follows, under date of September 22, 1883: *Pig Lead.*—The market is in a very inactive condition; consumers are buying only for pressing needs. No large sales are reported. Producers in most cases are sold ahead, which keeps the price of spot Lead quite firm. Sales are reported of about 500 tons. Prices are nominally $4.07½ @ $4.10. *Connellsville Foundry Coke* has changed but little from last week. The demand still continues good. The general opinion is that prices will advance during the coming month. Prime Foundry Coke is selling for $5.15 @ $5.20, and Crushed Coke at $6 @ $6.20.

CHATTANOOGA.

Office of *The Iron Age*, Market and 8th Sts., CHATTANOOGA, Sept. 24, 1883.

Business generally in the South is good. Failures are few and not important. Large dealers and producers are feeling strong and are not deterred from extending their business by temporary slackness. The great drawback upon manufacturing interests in this section is lack of a reliable supply of cheap fuel. That, however, is rapidly being overcome. We shall soon be able to record that furnaces have plenty of good and cheap Coke and mills plenty of cheap Coal. The weather during the week has been warm, closing cool and rainy. Streams are lower than for years, boating being entirely suspended.

Pig Iron.—The market continues in a scrappy and unsatisfactory state. The aggregate business is large, but bills are all trifling in amount. Prices are about as quoted, but sales seldom go above a few tons. We quote No. 1 Foundry, $19 @ $20; No. 2 Foundry, $18 @ $19; Gray Forge, $16 @ $19; White and Mottled, $14 @ $15; Car-wheel Metal, $24 @ $26.

Ores.—We quote 50 % Brown Hematite, ₱ ton, $2 @ $2.75; Red Fossil, $2 @ $2.25, delivered at furnace.

Miscellaneous Articles.—Old Rails are fairly steady at $22.50, with low stocks in the hands of dealers. There is a pretty well-founded opinion prevalent that there are no great amounts of them to come to market before the entire supply will be exhausted. Scraps are dull and unsought. Wrought Scrap, $18 @ $22; Cast Scrap, $11 @ $14; Old Wheels, nominal, $22.

Nails.—We quote Nails steady at $3 for carloads; 2 % off for cash; job lots, 10¢ @ 15¢ higher.

Merchant Iron.—Bar is about on the old level—$2 @ $2.10 for large bills, assorted sizes and lengths, 60 days, usual discount for cash, and about 10 % advance for special bills, rolled or furnished to specifications. We quote Bolts, $3.20 @ $3.25; Spikes, $2.70; Splice, $2.

Coal.—We quote Fancy Lump, $3; Common, $2.50; run of mine to manufacturers, $1.50 at mills.

Coke.—We quote Furnace Coke, $3 at point of consumption; Foundry, 10¢ @ 12¢ ₱ bushel.

LOUISVILLE.

GEO. H. HULL & Co., Commission Merchants, report as follows, under date of Sept. 22, 1883: The market for Pig Iron continues without animation. There is a large amount of iron being consumed, but buyers are purchasing only what they need for immediate use.

FOUNDRY IRONS.

No. 1 Hanging Rock Charcoal	$24.50 @ 25.00
No. 1 Southern Charcoal	22.00 @ 22.50
No. 1 Hanging Rock Stonecoal and Coke	19.50 @ 20.50
No. 1 Southern Stonecoal and Coke	19.50 @ 20.00
No. 2 " " "	18.50 @ 19.00
"American Scotch"	19.00 @ 20.00
Open Silver-gray	18.00 @ 18.50
Close "	17.50 @ 18.00

MILL IRONS.

No. 1 Charcoal	19.00 @ 20.00
No. 1 Stonecoal and Coke, Neutral	17.50 @ 18.00
No. 2 " "	16.50 @ 17.00
No. 1 " " Cold-short	17.00 @ 17.50
No. 2 " " "	16.50 @ 17.00
White and Mottled, Cold-short and Neutral	15.00 @ 15.50

CAR WHEEL IRONS.

Hanging Rock, Cold-blast	30.00 @ 32.00
" Warm-blast	23.00 @ 24.00
Alabama and Georgia, Warm and Cold-blast	27.00 @ 28.00
Central Kentucky, Cold-blast	26.50 @ 27.00

W. B. BELKNAP & Co., Iron and Steel Merchants, Nos. 115 to 121 West Main street, report to us as follows, under date of September 24, 1883: *Bars* show no change. Despite a good demand, prices fail to gather any strength, and it would seem as though we had entered on an era of low-priced Iron. Those mills that are lying by for an advance of any proportions to let them out might as well take in their signs. *Hoops* are dull, as distilling is at its ebb in this State. *Sheet* shows considerable improvement. Inquiries for the lighter gauges are large, and orders for immediate delivery fair. It looks as though slightly better rates might be realized for this class of Iron shortly. *Nails* are apparently seeking their level, for, while scarcity of transportation supports them in local markets, there is the steadily undermining force of competition affecting the mills. *Wire* is selling freely at late reductions. If there is anything in protestations, further shrinkage is impossible. We learn, however, of increased capacity and determination to sell full product from several makers who say they were conscientious members of the pool while that arrangement existed. It is pretty certain that very little royalty is being actually paid over at present. The drought continues as bad as ever, and the water courses are at the lowest point known in years. The exposition is in full blast and drawing large crowds, so that local trade is exceptionally good.

CINCINNATI.

SEPTEMBER 24, 1883.—*Pig Iron.*—Some increased demand for foundry grades is reported for the past week. Prices remain as before, with a firmer feeling on the Hanging Rock Softeners. This is attributed to the increased requirements for mixing with the Southern makes and shrinking kinds. The outlook on the market is thought to be sufficiently encouraging to some of the furnacemen to induce them to decide upon making full blasts through the current year. It is suggested that the present condition of the Iron market might be speedily and easily affected by the use of a few thousand dollars of ready cash, to retire Irons that are pressing the market, and to reach the prospective makes to some extent, and that even a small demonstration of a speculative nature would largely remedy the present unsatisfactory condition. Quotations for the past week:

Best Hanging Rock Charcoal Foundry, No. 1	$24.00 @ 24.50
Good No. 1 Hanging Rock Charcoal Foundry	23.50 @ 24.00
Southern Charcoal Foundry	20.00 @ 21.00
No. 1 Southern Coke Foundry	19.00 @ 19.50
No. 2 Southern Coke Foundry	18.00 @ 18.50
Hanging Rock Coke Foundry	20.50 @ 22.00
No. 2 Hanging Rock Coke Foundry	19.50 @ 21.00
Hanging Rock American-Scotch	21.25 @ 21.50
Hanging Rock Silver-gray Softeners	19.50 @ 21 00
Forge Stonecoal, Coke and Charcoal	17.50 @ 22.50
Car-Wheel Cold-Blast Charcoal	28.00 @ 30.00
Car-Wheel Warm-Blast Charcoal	25.00 @ 27.50

No sales of Scrap Iron reported to enable quotations. Rolling mills are all in full operation, mostly on orders. No accumulations of stocks are reported. The demand for Manufactured Iron is largely for the finer grades,

ST. LOUIS.

HOFFER & Co., Pig Iron and Iron Ore Merchants, 214 Pine street, report to us as follows, under date of Sept. 22, 1883: There is no improvement in the iron market, nor does there seem any prospect of improvement in the near future. We continue prices, which must be considered nominal:

HOT BLAST CHARCOAL IRONS.

Missouri	$20.00 @ 20.50
Southern	20.00 @ 21.00
Ohio	25.00 @ 26.00

COAL AND COKE IRONS.

Missouri	20.00 @ 20.50
Southern	18.50 @ 20.00
Ohio	20.00 @ 25.00

MILL IRONS.

Red Short	18.50 @ 20 00
Neutral	17.00 @ 18.00

CAR WHEEL AND MALLEABLE IRONS.

Missouri	21.00 @ 22.00
Southern	25.00 @ 28.00
Ohio	27.00 @ 32.00

BALTIMORE.

W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, reports us the following, under date of Sept. 24, 1883: Trade continues about the same as last reported, business being fairly active, but at unremunerative prices. Quotations are as per annexed figures:

Ref. Bar Iron, 1 to 6 x ½ to 1	₱ ₵ 2 1-10 @ 2 2-10¢
" " 1 to 4½ x 1½ to 1	₱ ₵ 2 1-10 @ 2 2-10¢
" " ¾ to 2, Round and Square	₱ ₵ 2 1-10 @ 2 2-10¢
Hoop Iron, 1½ wide and upward	" 3 @ 3 1-10¢
Band Iron, from 1½ to 6 in. wide	" 3½ @ 3 6-10¢
Horse-shoe Iron	" 3 2-10 @ 3 3-10¢
Norway Nail Rods	" 5¼ @ 5½¢
Black Diamond Cast Steel	" 11 @ 12 ¢
Machinery Steel	" 4½ @ 5 ¢
Spring Steel	" 4 @ 4½¢
Common Horse Nails	" 10 @ 11 ¢
Railroad Spikes, 5½ x 9-16	" 2 6-10 @ 2 7-10¢
Perkins' Horse Shoes, ₱ keg of 100 ₵	$4 37½
" Mule Shoes	5 37½

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From Our Regular Correspondent.)

LONDON, September 10, 1883.

THE WEEK

has once more been entirely uneventful from a business standpoint, scarcely any change worthy of note having taken place. This stagnation is beginning to be somewhat oppressive, and there are fears that it may develop into more serious proportions. So long as the holiday season proper was at its hight, it was easy to explain the absence of initiative in trade and commerce, but August has now passed away and September is adding to its age, yet there is no movement worthy of mention in any one department. On the Stock Exchange, in iron, metals, &c., the previously noted absence of speculation is accentuated, less having been done in that respect within the past two or three months than during any similar period within recent recollection. Money is superabundant, yet its owners are shy and neglect all dabbling in favor of Government and railway securities, some of which are thus maintained at abnormally high values. It is possible that the unsettled political atmosphere may have a good deal to do with the general want of animation, the uneasiness of France and its warlike expeditions in different parts of the world giving room for much anxiety as to their ultimate results. It is also felt that Germany may be disposed to provoke France to a conflict without much further delay, in order that France may be crumpled up and crippled as a first-class power for a century to come, seeing that in any new war between these powers, Italy would almost certainly participate, on the understanding that the Savoy Province should be restored to her, while Germany might exact terms infinitely more rigorous than those of the last settlement. Besides these matters, there are disturbing elements in Croatia and the Balkan principalities, while the state of Russia is anything but reassuring. These may be mere speculations and they may have no value whatever, yet commerce is much influenced by such things and the political barometer invariably forecasts the course of trade. A few days or weeks may remove all these disturbing elements, in which case commercial men will be greatly relieved and we may look for new developments.

The weather of the past week or so has been very unsettled over a large area of these islands, the great gale mentioned in my last having done much damage, especially to the fruit. Since then heavy rains have fallen, and have put a stop to harvest operations—indeed, in the North of England the bulk of the corn is still uncut. This is bad for all branches of trade, and in the event of a continuance of such weather there will be grave fears as to the home market. These fears will be all the more emphasized now that the Board of Trade returns demonstrate that our export business is undergoing a serious amount of shrinkage. Hitherto the lack of home business has been largely compensated for by the heavy and sustained volume of shipping trade, but if the export traffic also deteriorates, it is clear that the outcome must be very serious to manufacturers and all concerned.

THE IRON MARKET

has undergone no changes of moment during the week, which has been characterized by a continuance of the dullness which has been so much complained of recently. The export demand is still the mainstay of most branches of the trade, but here and there a little more is being done on home account, presumably owing to the promptitude with which some of the farmers are converting their cereal products into cash. At Glasgow warrants have been dull and in no speculative request, the closing price of the week being 46/3 ₱ ton. The local consumption is well sustained, and shipments are very good. The comparison with last year, indeed, is now considerably in favor of 1883. Lots of moderate proportions are being sent to the United States from Glasgow, and rather large quantities to Canada, but, so far as I can learn, there is little or no probability of any augmentation of the American demand in the near future. At the same time, certain brands of Scotch pig have a regular sale in the States, and must benefit by any expansion of general business there. At Middlesboro' the market has remained devoid of other than minor fluctuations. For prompt deliveries No. 3 pig is still relatively scarce, and is quoted 39/3 @ 39/6, while futures are offered at 38/9 @ 39/ ₱ ton. The ironmasters' returns for August are satisfactory as regards the shipments and make, but disappointing in respect of stocks, which increased by nearly 5000 tons during the month and now amount to over 275,000 tons. In the face of the good shipments, it is plain that the local consumption must have undergone a diminution. A large trade is being done with Germany and with Scotland. In the latter country the use of Cleveland pig is increasing, despite the No. 4 brands of Scotch pig. On the West Coast hematite ores are weak at 9/6 @ 11/ ₱ ton, and pig iron is also dull; mixed parcels of Nos. 1, 2 and 3 are called 49/ @ 50/, and have been inquired for on American account for prompt shipments to Philadelphia, &c., but I do not hear of new sales of importance. Underselling is in vogue, and stocks are still too large to permit of any rise in values. Elsewhere all grades of crude iron are quiet, with the market ruling in favor of buyers, and with probabilities against the transaction of much open business during the next two or three weeks, which will bring the third quarter of the year to an end. Heavy manufactured iron is still in large output, but the fact of prices for future deliveries being very appreciably below the quotations for prompts, affords incontrovertible evidence of the state of makers' order books. In fencing wire and galvanized iron there is nothing new to report, the few orders about being closely looked up at irregular prices. The leading German wire mills are said, nevertheless, to be pretty well off for work. All classes of ordinary merchant iron are quiet and nominal, the current inquiries being rather more numerous for common and medium qualities than for best brands. Staffordshire marked bars remain at £7. 10/, and ordinary Welsh at £5. 5/ @ £5. 7/6 ₱ ton. Some of the sheet mills are tolerably employed, but others are not fully occupied.

I have no change to note in connection with iron rails, old rails or scrap, save that old D. H. rails have been sold in considerable quantities for Italy, and meet with some inquiry at about 66/, f.o.b. London, on United States account. Shipments of heavy wrought scrap iron are being made by steamer to New York at equal to 64/ ₱ ton, c.i.f. that port. Freights are irregular. Pig iron by ordinary steamers Glasgow to New York is said to be rather firmer at 6/ @ 7/ ₱ ton asked. Liverpool rates are about as of late. As to the Bristol Channel ports, Edwardes, Robertson & Co., Cardiff, say: "The berth rates to New York are much easier, and although 12/6 has been paid, the average rate is now about 10/. There is very little doing on the berth for Baltimore, but full cargoes would meet with steamers at about 9/6 @ 10/. We have not heard of any transactions for New Orleans, but we think tonnage could be obtained at about 11/ ₱ ton." With respect to Australia, the East, &c., I am advised by Mr. W. Balchen, London, as under: "During the last month rates of freight to the Australian Colonies have been much firmer, at an advance by the "ring" lines for both sail and steam; this, however, may only be considered temporary, as, when the new steamers promised by the Anglo-Australian Steam Navigation Company come forward, competition will be again maintained, and rates may, consequently, in a short time be expected to be lower. For both India and the Cape Colonies freights are much firmer, an arrangement of their differences having been made by the various brokers in these trades, who put on the berth just sufficient tonnage for the requirements of shippers at remunerative rates to themselves. To the United States and Canada a good trade is being done at rates of freight favorable to the shipper. Generally the export trade appears to be slightly improving, more activity being manifest in some markets." Steel remains without features calling for special comment. The crucible-steel trade is dull as regards the principal export markets, but the home demand is tolerably well sustained, particularly as regards tool, engineering and cutlery sorts. The Bessemer concerns are all pretty fully engaged, but they are, in some instances, turning out more billets, &c., into the market, owing to the slackness of the rail trade. In blooms there is virtually no export business, and there is not a great deal being done in crop ends. The Siemens works remain very satisfactorily engaged on special grades of mild steel, plates, sheets, &c. Steel rails are nominally unaltered in all repects since my last report. Prices are uneven, and the few orders about are eagerly competed for by the different makers. Should no revival of the demand set in during the next two months, we shall doubtless witness still lower quotations, and possibly two or three rather peculiar developments of this industry. With respect to tin plates, your contemporary, the *Ironmonger*, has the following report from Liverpool:

"Despite the lull that prevailed during the first and second weeks of last month, and the gloomy prognostications then indulged in, there has been quite a revival ever since in the tin-plate business. A good business was done during the third and fourth weeks of August, and the spurt, slight as it was, does not seem to have exhausted itself even now, the first week in September. Most of the buyers, who continued to offer 15/9 I. C. during the short-lived depression at the beginning of August, have since willingly paid 16/ I. C., and in some cases 1½d. and 3d. more for ordinary size coke tins, and for anything of a special sort 6d. extra, and there are several still willing to increase their purchases almost to any extent at 16/ I. C., many being anxious to go on to the end of the year. But most makers refuse to go on so far as that, preferring to wait and take their chance after clearing off some of their present orders. What may be termed a big business has been done in coke tins during the last three weeks at 16/, and a fairly large business at 16/3 and 16/6 for anything out of the ordinary run either in size or quality. Coke tin wasters are in great demand, and may be said to be at a premium at 15/ ₱ box, some sellers now asking 15/3. The run for wasters has been quite an unprecedented one. It has become so great, in fact, that it certainly cannot be met just now, and consumers must revert to unassorted or primes, which is the proper thing to do. The demand for charcoal tins does not by any means come up to the expectation of some makers. The home trade may be said to be, on the whole, steady and fairly active, but the demand for the States is somewhat less just now. The prices of charcoal tins, therefore, vary very much in accordance with the assortment in the specification required, and grade or repute of brand. The general figures quoted are from 18/ to 20/ I. C., with the usual extras for X.'s. One significant fact may be mentioned as showing the state of this trade, viz., that all C. 28 x 20 steel plates with charcoal finish were offering this week at 37/ ₱ box, and these brands of good repute. Best coke coke tin and steel plates with a coke finish are being much sought after. The prices of these are at pretty even figures—from 17/ to 18/ I.C. The steel plates with coke finish are now being largely used, oftentimes in certain sizes—such as 10 x 20 and some squares—supplanting the old sort of charcoal and best coke iron plates. The demand for ternes has somewhat fallen off within the last week—in fact, the terne season is a bit 'off,' and only the oldest and best-known brands are taken by buyers just now. When the demand lessens and prices become easier, as at present, buyers have a pick of the choice brands—those of the highest repute. There has been a great increase in the output of ternes during the year, and especially since steel plates are found to answer the purpose so well. The increased make not being now really required, 16/ is about the general figure for ordinary run of charcoals, and 1/ less for cokes. Of course, the older higher-grade plate commands 6d. and even 1/ more. The prospects of the tin-plate trade for the remaining months of the year are, on the whole, bright. The tone of the market is strong and prices firm. A good business is being done in coke tins at 16/ @ 16/6, and an increasing business may be done at these figures, with wasters at 1/ less—that is, if makers care to go on booking."

SCOTCH PIG IRON

has been extremely quiet during the week, with a loss of several pence in value on warrants, which now stand at 46 3, as compared with 49/10 a year ago. There are now 114 furnaces at work in Scotland, as against 109 a year ago. In Connal's stores the total is 585,813 tons, whereas this date last year the quantity was 628,860 tons. Scotch pig shipments to date are 7171 tons ahead, and Middlesboro' imports into Scotland 27,284 tons ahead. Writing from Glasgow on September 8, James Watson & Co. said: "The Scotch iron market has been very depressed this week, owing to warrants being freely offered for sale and buyers holding back. The demand for shipping brands has been quieter, and prices are a shade lower. The warrant market here was flat last Monday, the price dropping from 46/11½ to 46/10, cash. On Tuesday the market further receded to 46/8½ ₱ ton. On Wednesday a good business was done between 46/9 and 46/6½, cash, and yesterday transactions took place between 46/7½ and 46/5 ₱ ton. To-day a large business was done from 46/6½ to 46/3, closing with buyers at the latter figure, sellers near. The shipments last week were 15,683 tons, as compared with 16,076 tons for the corresponding week of last year." We quote:

	No. 1.	No. 3.
G. M. B., at Glasgow	48/	45/6
Clyde, "	50/	48/
Coltness, "	50/	52/6
Langloan, "	50/	52/6
Gartsherrie, "	56/3	52/6
Summerlee, "	57/	51/
Calder, "	57/6	50/
Carnbroe, "	55/	48/6
Glengarnock, at Ardrossan	54/	47/6
Eglinton, "	48/3	45/3
Dalmellington, "	48/6	47/6
Shotts, at Leith	50/	54/
Kinnell, at Bo'ness	48/6	47/6
Carron, at Grangemouth	49/	47/6

MIDDLESBORO' PIG IRON

is still very irregular, with prompt lots of No. 3 at a slight premium. The bears are evidently working this to advantage, but their triumph will not last long, as very short futures are lower. The current rate may be called 39/3 @ 39/6 for No. 3 prompts, and 38/9 @ 39/ near futures, with G. M. B., f.o.b. makers' wharves in Tees, as under:

No. 1 Foundry	43/	Mottled	37/6
" 2 "	42/	White	37/
" 3 "	39/	Refined Metal	55/
" 4 "	38/6	Kentledge	40/
" 4 Forge	38/	Cinder	34/

The Cleveland ironmasters' returns for August are as under:

MAKE OF PIG IRON.

	1883. Aug. Tons.	1883. July. Tons.	Increase. Tons.	Decrease. Tons.
Clevelandpig, whole district	156,523	155,680	843	...
Other kinds, including hematite, spiegel and basic pig iron, whole dis't	77,108	75,504	1,604	....
Total of all kinds, whole district	233,631	231,184	2.447	....
Furnaces on Cleveland pig iron at end of month, whole district	83	85	....	2
Furnaces on hematite, &c., at end of m'nth, whole dis't	34	33	1	....
Total	117	118	....	1

STOCKS OF PIG IRON.

	1883. Aug. 31. Tons.	1883. July 31. Tons.	Increase. Tons.	Decrease. Tons.
Makers' stocks of Cleveland p. iron, whole district	180,125	170,552	9,573	11,085
Makers' stores of Cleveland p. iron, whole district	19,782	21,812	.....	.....
Pig iron in public stores:				
The N. E. R. Co.'s stores	3,800	4,210	.....	140
Connal's stores	71,491	73,667	.....	2,176
Total	275,198	270,241	4.957	.....

SHIPMENTS OF PIG IRON FROM PORT OF MIDDLESBORO'.

	1883. Aug.	1883. July.	1882. Aug.	Inc. on July, 1883.	Dec. on July 1883.
	Tons.	Tons.	Tons.	Tons.	Tons.
Shipments foreign	56,647	49,015	58,150	7,622	.....
Shipments coastwise	31,838	36 202	37,711	.. ..	4.634
Total	*88,485	†85,217	95,861	3 268	.....

* Including 5761 tons of pig iron other than Cleveland.

† Including 2581 tons of pig iron other than Cleveland.

HEMATITE PIG IRONS

are reported to be a trifle firmer, probably owing to rumors of inquiries and offers from your side, but quotations have not as yet been appreciably affected. Mixed parcels on the West Coast are 49/ @ 50/ ₱ ton, and makers' brands are:

	No. 1.	No. 2.	No. 3.
Cleator	54/6	53/6	52/
Lonsdale	50/6	50/	49/6
Workington	50/6	50/	49/6
Lowther	50/6	50/	49/6
Distington	50/6	50/	49/6
Harrington	52/	50/6	50/
Solway	50/6	50/	49/6
Maryport	50/6	50/	49/6

North of England hematite pigs are, f.o.b. Cumberland ports, &c., now quoted as under:

No. or quality.	Ordinary.	Bessemer.
No. 1	51/ @	51/
No. 2	50/ @	50/6
No. 3	49/ @	50/
No. 4, Foundry	.... @	50/
Mottled	.... @	49/6
White	.... @	49/6

THE BOARD OF TRADE RETURNS

for the month of August, just issued, are in some respects of a disappointing character. They show that the total value of the imports last month was £36,224,986, as compared with £33,111,785 in August, 1882, and £32,687,848 in August, 1881. The total for the eight months of this year is £287,105,694, against £274,360,469 last year, but the increase, it should be noted, has been largely in respect of food stuffs, and not in raw materials for the use of British manufacturers. The aggregate value of the exports last month was £21,384,962, against £21,559,018 and £21,180,695 in August, 1882 and 1881 respectively. In almost all the leading items of export there were decreases of greater or less value, and, as will be seen by the appended table, the falling off was largely with your buyers.

THE UNITED STATES.

The month's exports, shown in comparative form, were as under:

Articles.	Month of Aug., 1883.	Month of Aug., 1882.	Month of July, 1883.
Alkali, cwts	293,576	284,372	212,086
Hardware and cutlery, £	33,606	58,086	40,547
Iron—Pig, tons	29,374	67,609	35,028
Bar, angle, rod, &c., tons	305	1,477	314
Railroad, all, tons	9,683	13,385	5,719
Hoops, sheets, plates, &c., tons	3,667	5,240	4,541
Tin plates, tons	21,114	20,709	20,158
Cast or wrought, tons	352	442	332
Old, tons	1,181	4,916	3,080
Steel, unwrought, tons	957	8,476	1,131
Lead, all sorts, tons	3	10	.....
Steam engines, £	119	4,820	3,559
Other machinery, &c, £	19,608	51,470	29,671
Tin, unwrought, cwts	851	5,116	801
Special return—Iron rails, tons	120	200	.....
Steel rails, tons	9,391	12,979	3,547

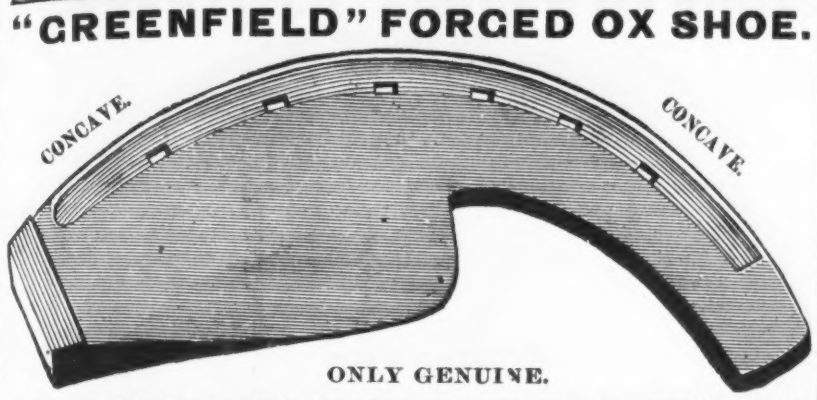
FOREIGN.

FRANCE.

(Moniteur des Interets Materiels.)

PARIS, Sept. 10, 1883.—*Metals.*—As matters stand, it would be wrong to expect much of a revival in general business in France before the middle of next month. Meanwhile, with the complications on hand in distant countries, and a large wheat crop deficit of 40,000,000 hectolitres, prospects are the reverse of cheerful. Metals have, meanwhile, been in moderate request at pretty nearly the same rates as last week, but Copper lower and Tin partially better. We quote ₱ 100 kg., in francs: *Copper.*—Chili Bars, 167.25 @ 166.50; Ingots and Slabs, 170; Best Selected, 175, and pure Corocoro

"GREENFIELD" FORGED OX SHOE.



ONLY GENUINE.

We now control the Patents for these Shoes, having succeeded the Greenfield Tool Co. in their manufacture and sale. Recent decisions of the United States Court have sustained the validity of these patents, giving us exclusive right to make Concave Ox Shoes. We believe them to be the best and best-selling shoe in market, and offer them with the fullest guarantees. With our facilities we can fill large orders at short notice, and are now ready to do it.

No. 1, Full Length, Concave, 5 inches, Weight, per Set of Eight Shoes, 3 pounds.
" 2, " " 5½ " " " " " 3½ "
" 3, " " 6 " " " " " 4 "
" 4, " " 6½ " " " " " 5 "

Packed in boxes or kegs of 100 pounds, half each rights and lefts. Full weight, and no charge for packages.

PRICES.

For orders of 1 ton or more.....11 cts. per pound.
" 1000 lbs. or more.....11½ " "
" 500 " " .....12 " "
" less than 500 lbs.....12½ " "

Terms, Net Cash, 30 days.

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FACTORY, - - - - - - - Millers Falls, Mass.

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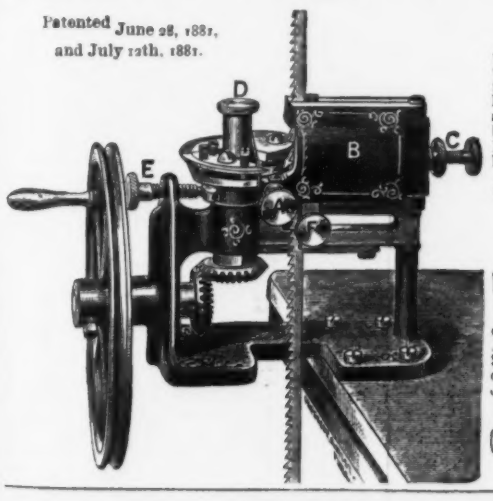
Patented June 28, 1881, and July 12th, 1881.



Save Its Cost in a Few Weeks

Any boy that can turn a crank can file a band saw in from five to ten minutes more accurately than an expert filer can do the same by hand in one hour. Keeps the teeth even and level, and enables the saw to do more and better work with much less strain. Pronounced by users to be the best labor-saving machine ever introduced.

First Premium and Diploma of St. Louis Agricultural and Mechanical Association, 1881, Awarded for

Best Band Saw Filing Machine.

Is sold at a price within the reach of every one using a band saw. *Reduced Price List.*—Net price, including 20 files. $32; thin corner and facing files, per dozen, $1.20; thick beveled files, per dozen, $1.80. Terms strictly cash.

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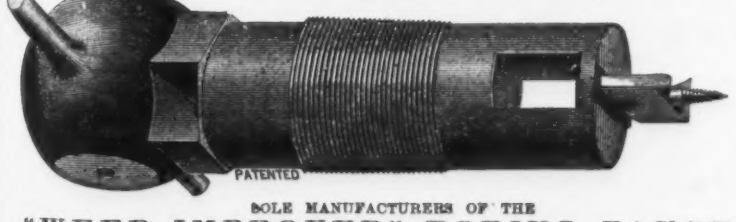

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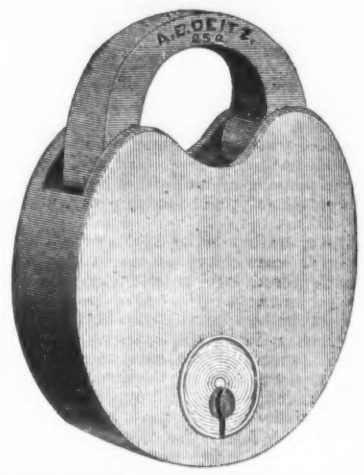

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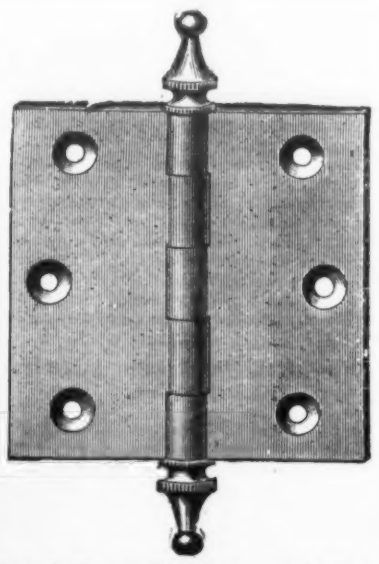

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PATENT

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ESTABLISHED IN 1839.

Our Genuine Wrenches are made with straight bars, full width and enlarged jaw, having ribs cast inside, which strengthen the jaw and give a full bearing on front of bar. These improvements, in combination with our new ferrule, made with double bearings, an iron tube, fitted to the shank and resting against the lower bearings, rigidly held in position by the handle and nut, effectually preventing back thrust of ferrule (see sectional view), verify our claim that we manufacture the heaviest and strongest Wrench in the market. None genuine unless stamped

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1883.

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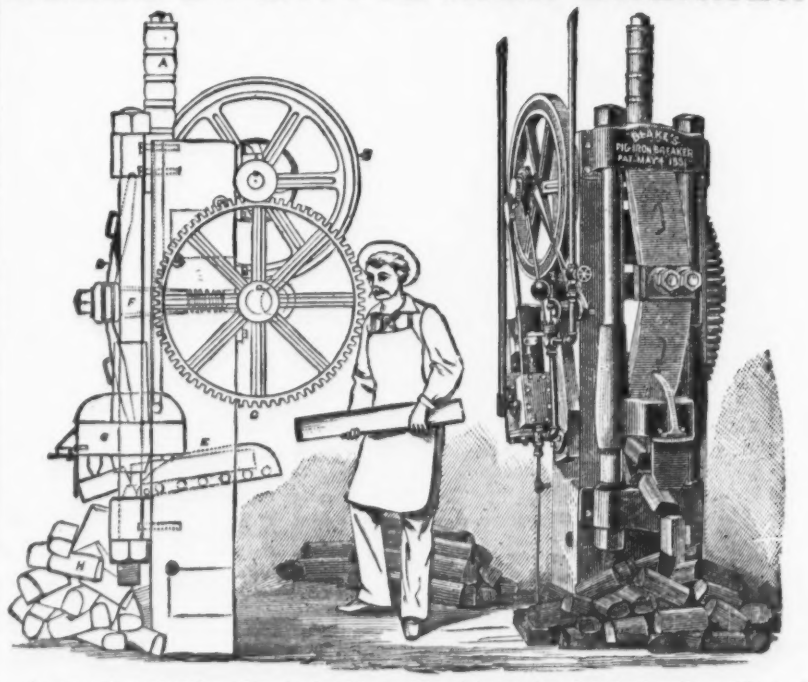
BLAKE'S PAT. PIG IRON BREAKER.



A new and successful machine for breaking pig iron into any length desired, with rapidity and economy. Besides saving in cost of breaking by hand, it secures the greatest economy in melting. Several machines already in use. Every machine guaranteed against breakage of parts. Requires but three horse-power. Can be run by belt or have small engine attached.

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Ore 170. *Tin*—Banca, 256.25; Billiton, Australian and Straits, 253.75, and English, 250. *Lead*, 31 @ 32, and *Spelter*, 39.50 @ 40. *Iron.*—The late vote of the Chambers ratifying the Government agreement with railroads had been so long delayed that the new orders from these, as they still lack the authority of shareholders, arrive tardily, and the consequence is that at the North, for example, the Iron market cannot be sustained. In this manner Iron is offered so low by makers in this market that Merchant Iron still sells at 17 francs ₱ 100 kg. at Paris, Charcoal Iron at 24, Sheets at 23 @ 26, and Wire Nails, No. 18, in bulk, at 27. There is much apprehension of hard times in the Iron regions of the North next winter. Makers there, rather than discharge hands, sell Merchant at the ruinous figure of 12 francs. In the Haute-Marne a small current of orders keeps things going in a moderate way. Coke Merchant sells there at 19; mined at 20. At Marseilles there has been great dullness during the week, causing weakness throughout the list at that point. As matters stand, the general state of affairs remains doubtful in the Iron and Steel markets. On *Coal* these uncertainties also have a quieting effect for the moment. The general impression is that October will be all the higher, since by that time a favorable chance is likely to have occurred in the demand for Iron. Prices remain steady.

BELGIUM.

(*Moniteur Industriel.*)

BRUSSELS, Sept. 10, 1883.—*Iron.*—Week after week a better feeling, accompanied by larger dealings, develops. There is not much bargaining on the part of buyers, while makers decline to go on making engagements ahead at ruling rates; in other words, they are in a better position for dictating terms. Nearly all Belgian rolling mills have got plenty of orders to keep them going for months; only the few that have not prevent a serious advance even now. Inferior grades of Iron are likely to be the first to advance. Meanwhile, No. 1 Merchant is not yet generally saleable at 12.75 francs ₱ 100 kg., but it soon will be. Pig Iron remains steady; English at 5.75; Charleroi Foundry, 7.25; Luxembourg, 6 @ 6.25; Puddling, 4.50 @ 5.50. Some 8000 tons steel Rails sold, deliverable at Antwerp, at 11.80. Beams are 13, and Corners 13.50. Sheets, No. 2, 17 @ 17.50; No. 3, 19.50; Commercial, 23; Thin, 25, and No. 4, 27. Import of Iron Ore into this country, seven months, 938,340 tons, against 689,503 last year; export, 249,080, against 193,312; of Pig Iron, 92,821 tons imported, against 92,365 last year; export, 10,560, against 9697. Nails, 197 tons imported, against 255, and 4408 tons exported, against 5894. We quote Steel Hoops at the close, 22, and Axles, 23. *Metals* have been steady and moderately active at ensuing rates: Copper, ₱ 100 kg., 167.75; Banca Tin, 248; Billiton do., 247; Lead, 21 25; Spelter, 37.60, and Antimony, 102. *Coal.*—Now that there is a revival in the Iron and Steel trades, Coal, which for a year past has been enjoying a good demand at improving figures, gains in briskness. The import of Coal into Belgium during the first seven months has been 681,645 tons, against 516,807 last year, and of Coke, 21,500, against 10,082, and the export of Coal, 2,282,391 tons, against 2,276,112 tons, while of Coke it has been 610,607 tons, against 622,978.

GERMANY.

(*Borsenhalle.*)

HAMBURG, September 11, 1883.—*Iron.*—In Rhenish Westphalia the demand has assumed greater proportions, especially for Puddling Pig and Merchant Iron; it therefore looks as though the market would at length emerge a little from the torpor that had invaded it. Consumers no longer hold back as they previously used to do, there being indications that an increase of consumption is at hand. All rolling-mill products begin to move off tolerably well, Sheets in particular. Only the Steel works pretend that they lack sufficient work, but they have no cause yet for downright complaint. The number of furnaces engaged in puddling in all Germany in July was 70; on Spiegel, 13; on Bessemer, 19; on Thomas, 13, and on Foundry Pig, 33; together, 148, against last year, same month, 128; total Iron production first seven months, 1,052,314 tons, against last year 1,782,313. Notwithstanding the pretended curtailings of work there has consequently been a notable increase in the joint output. Quotations at Dusseldorf: Prime Spiegel, 62 @ 64 marks ₱ ton; White Pig, prime, 55; Luxembourg, 40; Charcoal, 76 @ 82; Foundry, No. 1 to 3, 72 @ 59; Mudelia, 78 @ 80; English, No. 3, 60 @ 62; ditto Bessemer, 49; ditto Mudelia, 58 @ 59; ditto German, 57 @ 58; Sheets, 175 @ 195. About *Petroleum*, Wirth & Co. write from Frankfort: "Great animation in the Caucasian oil districts; all Russia exclusively consumes these oils now, they are sold to advantage in Eastern Germany and Turkey; Greece, Italy and Southern France will soon be regular consumers in consequence of cheap sail freights. Russian lubricating oil deserves special enconium, while a great deal of bad quality American appears in the markets." *Metals* have been quiet. Lead continues flat at 13 @ 13.25 German; Copper unaltered, 76; Lake and other sorts, 70 @ 78; Tin firmer, 103 @ 106, and Spelter dull at 15.15 @ 15.50.

HOLLAND.

(*Koch & Vlierboom.*)

ROTTERDAM, Sept. 11, 1883.—*Tin* has been firm during the week, 1200 slabs Billiton selling on landing at 56 guilders ₱ 50 kg., while, in a small way, 56 25 has been paid on the spot. Billiton afloats are nominally worth 56.75 @ 57. Banca remains quiet at 57.25.

AUSTRIA.

(*Austrian Trade Journal.*)

VIENNA, Sept. 8, 1883.—*Iron.*—Nothing has occurred to materially modify the situation in Austro-Hungary. In heavy Iron the trade continues satisfactory, both as regards deliveries and orders dropping in. The demand for Pig Iron being as pressing as ever, large lines of Silesian have had to be imported from Prussia. This importation would not have paid but for the liberal freight reductions made by Bohemian and other railroad lines. Our blast furnaces have, however, made strenuous efforts to increase their output, and thus meet the growing requirements at home. Both in Austria proper and Hungary new blast furnaces are in course of construction, and we shall soon be better able to satisfy the home demand. A steady trade can be reported in rolling-mill products and Structural Iron. Hardware, however, forms an exception, being hampered in various portions of the monarchy by the confused political status and disorders it breeds. Plenty of work is noticeable at the machine shops, rail works and car shops. Iron is steady: Pig, 51 @ 60 florins; Merchant, 115 @ 134; Sheets, 175 @ 195, and Beams, 140 @ 145. *Metals* quiet and unaltered.

EAST INDIES.

(*Gilfillan, Wood & Co.*)

SINGAPORE, August 4, 1883.—*Tin*—Has ranged in value from $29.87½ to $30.50, but we have had a dragging market on the whole, and the closing quotation of $29.93 is barely maintained by the operations of one firm. Shipments to New York for the month are large. *Freights.*—Tonnage is in abundant supply and rates have declined. For New York the Cashmere has cleared and particulars of her cargo show no Tin shipped by her. For Boston the Sokoto has been chartered on secret terms. *Exchange* is steady at 3/8¾, six months' sight credit drafts on London. The Glamis Castle took, for New York, 1337 piculs of Tin; the Glaucus, from Penang, 841, and the Rosslyn, 2507, all for New York.

(*Hessenauer & Co.*)

COLOMBO, August 18, 1883.—*Plumbago*—Has been dull at unchanged prices. We quote, at the close, in rupees, ₱ ton: Lump, Fine, 140 @ 150; Ordinary, 125 @ 130; Chips, 60 @ 70; and Dust, 40 @ 50. Shipments since October to England, 96,435 cwts.; to Trieste, 205; to Havre, 755; to India, 1016, and to the United States, 147,425; together, 245,840 cwts., against last year, 198,869; in 1881, 139,713, and 183,347 in 1880. *Exchange*, 1/8½.

(*Dunmler & Co.*)

BATAVIA, August 4, 1883.—*Tin.*—Arrivals in Java for Government account in July amounted to 21,-405 piculs from Banca, and 2102 from Billiton. The next Billiton sale will come off in this city on the 29th inst., to be followed by sales on ensuing dates: October 30, December 22, February 26, 1884, and April 29, each of about 10,000 piculs. *Iron.*—Nine guilders is not to be obtained for Swedish. English Bars continue saleable at 6.75 for Flat and Square, while Corrugated Sheets command 14. Dutch Copper Sheathing, assorted numbers, fetched 67; in English nothing has been done. Sheet Zinc has realized 16 @ 17.50. *Petroleum.*—Business very dull, and prices of floating cargoes constantly receding. Total arrivals this year from New York so far, 813,480 cases. *Coal.*—Most consumers are fully provided, and there prevails almost a total absence of demand.

(*Schmidt, Kustermann & Co.*)

PENANG, August 11, 1883.—*Tin.*—The large receipts during the week—some 10,000 piculs—meeting with an active demand, a large business has been transacted, 6600 piculs being bought for Europe and 1400 for China. The market opened at $29.55, gave way, subsequently, to $29.41, then advanced to $29.65, and finally wound up at $29.50. *Exchange*, 4 months' bank, 3/8.

METALLURGICAL NOTES.

Mill Furnace Bottoms.

According to accounts published in a number of British technical journals, interesting experiments were recently completed at the Greatbridge Iron and Steel Works, Tipton, England, in connection with oxide bottoms for mill furnaces. An arrangement that has been adopted at several works in South Staffordshire, and also in Scotland, for doing away with sand bottoms and using oxides, is a hot-air chamber patented by Mr. Job Tibbs. In constructing a furnace according to his invention, the iron-plate bottom of the furnace is inclined from front to back, and also from the fire-bridge to the flue-bridge. At the back, and near the flue end of the furnace, is a hole or channel which opens out into a small supplementary chamber containing wagons, and during a heat the fused cinder formed runs off into the wagon, leaving the bed dry. An oxide bottom used under this arrangement, with a fettling of from 3½ inches to 7 inches thick, as compared with the sand bottom, will, the maker claims, produce a far superior quality of iron, and at a greatly reduced cost per ton less, so effectual is the prevention of the accumulation of the melted cinder on the bed and its running in among the piles. The patentee claims also that, whereas some cinder bottoms are used in plate and rail mills for the first heating, re-heating being accomplished on a sand bottom, by his chamber the second heating can be accomplished on the same bottom as the first. Recognizing its advantages, Mr. Scovil, of Scovil, who leases Coldbrook Rolling Mills, St. John's County, N. B., is about to introduce this form of the oxide-bottom system into the States, and for this purpose adapt the chamber to gas furnaces in Pittsburgh, where sand bottoms are now almost exclusively used. A native ore that would make as good a cinder bottom in the States as the pottery mine in Staffordshire was expected in the Port Henry ore, a high-class hematite material found in large quantities at Port Henry, on Lake Champlain, in the northeastern part of New York State. Five tons of this ore were sent over to Staffordshire, and it was to test its action that the Greatbridge experiments were conducted. There were present a number of South Staffordshire ironmasters during certain of the days during which the trial was proceeding. The five tons kept one mill furnace-bottom good while 74¼ tons of finished iron were made from it and rolled into angles and other sections. Throughout the trial the heat was purposely kept extreme, in view of the prospective use of the gas furnace, and the opinion was that the greater the heat the better. On several occasions, the bottoms, during the heats and after them, were perfectly uniform in surface and in color, and, notwithstanding the extra heat, there were no cracks or gutters, while the clearness of the piles as they were taken to the rolls showed that there had been no approach to sucking. The appearance also of the sections after passing through the rolls was all that could be desired. Altogether, the Port Henry cinder was not only as good as that of the pottery mine, but surpassed it, and led makers to remark that, if the ore could be got from the States at ballast rate, it would be worth while to import it rather than continue to use the pottery mine. Touching the action of the cinder in the puddling furnace, it may be added that the cinder from the 5 tons was taken to two puddling furnaces and lasted 11 turns. The yield in this case also surpassed that obtained where the Staffordshire materials are used, being larger by 1¼ cwt. per hour for the two furnaces. The cinder from the mill furnace turned out 28 tons, 3 quarts, 26 pounds of puddled bars, and the weight of pig iron taken to the puddling furnace was 29 tons, 9 cwt., 2 quarts, 16 pounds, or 130 heats of 4 cwt., 29 quarts, 4 pounds each.

Original Discovery of Iron and Steel.

In his address on technical training, delivered a short time since before the Alumni Association of Lehigh University, Dr. Thos. M. Drown, of Easton, Pa., pictures the discovery of metallic iron and steel as follows: "Nearly all the early discoveries in the arts were the result of accident or haphazard experiment. We can well imagine that a fire large and intense enough to reduce iron from its ore must often have been made in accidental contact with surface ore, and that the presence of the metal in the ashes must have attracted attention. This observation once made, there would follow a series of experiments to determine the conditions under which the metal was produced, and the substances necessary for its production. It would not long escape intelligent observation that a certain brown earth, or may be a black rock, was the substance which yielded the metal, and that fire was the necessary condition of its formation. But the iron thus accidentally produced—a mixture of metal, cinders and ashes—was of no value till further experiment revealed the fact that the metal could, when hot, be united by hammering into one mass, with the separation of cinder and other extraneous matter. The discovery of this property prompted still further experiment. The irregularity of the product would suggest the more perfect control of the fire, and small furnaces would be built. In the course of time it would be noted that the iron was not uniform in hardness, and an accident would be sure to reveal the fact that sometimes the metal, when suddenly cooled in water, would become intensely hard. This new line of investigation would result in the production of steel."

A New Ore Stamp.

Mr. James McFarland, of Carson, Nev., recently patented a device calculated to overcome the difficulty usually encountered in the ordinary form of stamp battery, and resulting from the fact that when the cam is revolved above a certain rate of speed it completes its revolution and catches the tappet before the stamp has had time to finish its stroke. Mr. McFarland, therefore, provides the ordinary frame of the apparatus with a suitable projection carrying a cross-shaft on which are two diverging arms. One of these arms is curved downward and forward to the tappet, on the top of which its end rests. The end is turned up to avoid interference with the tappet. The other arm extends back and downward and somewhat in the shape of an impperfect letter S. These two arms are joined together on one hub on the shaft.

The operation of the device is as follows: When the cam raises the tappet the forward arm is raised with it, and the rear arm is drawn inwardly, its lower curve fitting against the back of the cam at the moment the cam relieves the tappet. In its continued movement the cam must force this rear arm outward or backward again, by doing which the forward arm is forced down upon the top of the tappet and accelerates the drop or fall of the stamp. By this construction the stamp must deliver its blow, because the cam cannot free itself from the rear arm until it has forced it back completely, in which position the forward arm must have forced the stamp to its limit of downward throw. From the first impingement of the cam against the rear arm to the end of its contact therewith, the speed with which it is forced out increases, and the descent of the upper or forward arm is consequently increased, thus exerting its force upon the tappet to the very moment of striking the ore in the mortar, or nearly so, according to the hight of the ore in the mortar.

At a low rate of speed these arms would play no part, as the drop of the stamp would be fast enough; but at a high rate of speed the rear arm would be forced out quickly enough to force the forward arm down upon the tappet and speed the stamp. The inventor claims that this principle can be applied to stamp-mills of the usual construction, having any number of stamps of any weight.

Notes from the Vienna Electrical Exhibition.

A gentleman who has contributed several articles to our columns, and who is at present in Vienna, favors us with the following in regard to the newly opened exposition:

Electrical engineering—as distinguished from telegraphical engineering—having attained its present state only through its connection with mechanical engineering, an exhibition of this sort contains many objects of interest to the mechanical engineer. Boilers, together with their steam engines, gas and caloric engines, pulleys, belts, dynamometers, electric motors, &c., are all indispensable for the production and utilization of electricity for light and power on such a large scale, and are of direct interest to the mechanical engineer. Although the present unfinished state of the exhibition prevents us from sending detailed descriptions of such exhibits, a mere mention of some of them might be of interest.

The 52 boilers, generating the steam for about 1300 horse-power, are all located in one of the courts inclosed within the building. In order to supply them with coal without carrying it through the building, a cable transporter was built leading from the freight station, some few hundred feet from the building, with a gradual upward grade over a portion of the building to a tower in the boiler-house, where they are lowered into the coal bins, the power being supplied by a small 2-horse-power electric motor.

An American windmill outside of the building drives a small dynamo in connection with accumulators, showing the application of stored-up wind-power. An electric railroad, built by the well known firm of Siemens & Halske, runs from the horse-car lines to the building—a short mile. The motors are under the cars, the two rails serving as the two conductors. A small printing-press on which exhibition news is printed with "electrical" rapidity is also driven by an electric motor.

Among the gas engines is one of a new pattern containing two parallel cylinders, the cranks making no angle with each other; the pistons work together, but as the gas in one explodes the other is charged, so that there can be an explosion for each revolution—not for every two revolutions—as in the ordinary Otto gas engine.

The perpetual-motion men are not all extinct yet. Notwithstanding the strictly scientific character of the exhibition, an inventor exhibits a clock which he calls "perpetual motion." It is a neatly-made clock which will run forever without being touched by any one, except, perhaps, to be oiled. As it is, strictly speaking, not a perpetual motion, it is of great interest; the principle on which it depends is that the change of temperature and atmospheric pressure winds up the weights.

Turret Test Plates.—An answer has finally been received from the Creuzot Steel Works, in France, to the effect that they will furnish the plates for the test of the turrets for the unfinished monitors for which Congress, at the last session, appropriated the sum of $20,000. Having spent some four months in considering the matter, they reply that they will accept the offer of the Navy Department, but cannot furnish the plates for five months. This will probably delay the completion of the monitors for another year. It was understood that Congress, by appropriating the money to test a new style of turret, did not intend to make any provision for the completion and armament of the iron-clads until this controversy as to the relative merits of deflective and vertical armor was settled. There was no doubt that Congress strongly leaned to the deflective armor, but, naturally, the old officers of the department, not seeing any good in what did not come through a member of the ancient and regular line of the service, made some opposition to its adoption. Congress thereupon said: "Well, test the matter, and the monitors can wait for their turrets till we find out, by actual experiment, who is right." The feeling on the subject rises to an extreme hight at times. The friends of the deflective system call the vertical turret the "ancient cheese box," and the old skeptics call the new system the "inverted soup plate." The fact remains, however, that Congress was so impressed with the "soup plate" that money was refused for turrets, except for the test. The fear is now that the tests cannot be completed in time for action next session.

In accounting for the satisfactory condition of trade, compared with the weakness and demoralization exhibited in the stock market, one of our political economists finds an explanation in the fact that railroad building in this country has advanced in a higher ratio than agricultural production. The increase of population, as of the average brought under cultivation since 1879, has been about 2 per cent. per annum, while the increase of railway mileage has been about 9 per cent. yearly. This being the case, it is no wonder that in many instances stocks and bonds successfully "floated," and then "pegged up," are now settling to their normal line of value. But the country at large prospers just the same.

The Guion Line steamer Alaska has made another quick run across the Atlantic, this time making the passage from Queenstown to Sandy Hook in 6 days 21 hours and 40 minutes. Last November she ran from Sandy Hook to Queenstown in 6 days, 18 hours and 37 minutes. Neither her easterly nor westerly passages have ever been surpassed. The new steamer Oregon, of the same line, which will sail from Liverpool for this port early next month is also expected to be a very fast ship. She is reported to have made 23 miles an hour at her trial trip a few days ago.

The iron steamship San Diego, of 2500 tons burden, built for the Oregon Railway and Navigation Company, was recently launched from Roach's shipyard at Chester. This vessel makes the tenth of the large class of steamers built for this company, eight of which were constructed at Mr. Roach's shipyard and two by the Messrs. Cramp, in Philadelphia.

A dispatch from Boston, dated September 24, announces that an attachment has been placed by C. H. Delameter & Co., of this city, upon the steamer Meteor, recently brought to Boston from this city, the company controlling it having been financially embarrassed.

Several large consumers of water in this city, notably manufacturers, find themselves victims of fraudulent collectors of water rents, who offer to accept payment and make a little discount from the face of the bill. About $26,000 are thus missing from the city treasury, and several clerkships in the Water Rates Bureau are vacant.

Mr. Villard, having opened up Oregon and Washington Territory to the East, is now credited with the ambitious scheme of forming a continuous line along the Pacific coast from Portland south to San Diego, a distance of something like 1500 miles.

The Duryee Furnace, at Silver Cliff, Col., is pronounced a success.

WHOLESALE METAL PRICES, September 26, 1883.

(For Wholesale Hardware Prices See Pages 31, 32.)

METALS.

IRON.—DUTY: Bars, 8-10 c to 1 1-10 c ₩ lb; provided that no Bar Iron shall pay a less rate of duty than 25 per cent. Sheet, 1 1-10 c to 1 5-10 c ₩ lb. Band, Hoop and Scroll, 1 c to 1 4-10 c ₩ lb. Pig and Scrap, 3-10 of 1 c ₩ lb. Plate, 1½ c ₩ lb. Railroad Bars weighing more than 25 lb ₩ yard, 7-10 of 1 c ₩ lb.

American Iron

Foundry, No. 1	₩ ton	$22.00 @ 23.00
Foundry No. 2	₩ ton	19.00 @ 20.50
Gray Forge	₩ ton	18.50 @ 19.00

Scotch Iron.

Carnbroe	₩ ton	22.00 @ 22.50
Coltness	₩ ton	23.25
Shotts	₩ ton	23.00 @ 23.25
Glengarnock	₩ ton	22.00 @ 23.00
Gartsherrie	₩ ton	23.00 @ 23.50
Langloan	₩ ton	24.25
Summerlee	₩ ton	22.50 @ 24.00
Dalmellington	₩ ton	21.00 @ 21.50

Rails.

Steel at Eastern mills	₩ ton	37.00 @ 38.00
Old Rails Ts		23.00 @ 23.40

Scrap.

Wrought, ₩ ton from ship and yard		22.00 @ 24.50

Bar Iron from Store.

Common Iron ⅜ to 1 in. round and square	₩ lb	2.10 @ 2.20c
Common Iron 1 to 6 in. x ⅜ to 1 in.	₩ lb	2.10 @ 2.20c
Refined Iron: ⅝ to 2 in. round and square	₩ lb	$2.30 @ 2.40c
Refined Iron: 1 to 6 in. x ⅜ to 1 in.	₩ lb	2.30 @ 2.40c
1 to 6 in. x ¼ and 5-16	₩ lb	2.50 @ 2.60c
Rods—⅝ and 11-16 round and square	₩ lb	2.40 @ 2.50c
Bands—1 to 6 x 3-16 to No. 12	₩ lb	2.70 @ 2.80c
Norway Nail Rods	₩	@ 5¼c

Sheet Iron.

	Common American	R. G. American.
Nos 10 to 16	₩ lb 3.15 @ 3.30c	4¼c
17 to 20	₩ lb 3.40 @ 3.60c	4½c
21 to 24	₩ lb 3.60 @ 3.90c	4¾c
25 to 26	₩ lb 4.00 @ 4.20c	5 c
27	₩ lb 4.25 @ 4.35c	5½c
28	₩ lb 4.40 @ 4.65c	5¾c
	B. B.	20 qual.
Galvanized, 10 to 20	₩ lb 7 c	6 c
Galvanized, 21 to 24	₩ lb 7½c	6½c
Galvanized, 25 to 26	₩ lb 8¼c	7 c
Galvanized, 27	₩ lb 9 c	7½c
Galvanized, 28	₩ lb 9½c	8 c
Patent Planished	A ₩ lb 10½c	B. 9½c
Russia	₩ lb	14 @ 15c
American Cold Rolled B. B	₩ lb	7½c

COPPER.—DUTY: Pig, Bar and Ingot, 4c; Old Copper 5c ₩ lb. Manufactured (including all articles of which Copper is a component of chief value), 35 % ad valorem.

American Ingot ₩ lb See Trade Report.

SHEATHING BRAZIERS COPPER, BOLTS, &C.

Braziers' Copper, ordinary sizes, 16 oz. per sq. ft., and over ₩ lb 26c

Brazers' Copper, ordinary sizes, under 16 oz. and over 12 oz., ₩ sq. ft. ₩ lb 28c

Brazers' Copper, 10 oz. and 12 oz., ₩ sq. ft. ₩ lb 30c

Brazers' Copper, Lighter than 10 oz. ₩ sq. ft. ₩ lb 32c

Circles less than 24 in. in diameter ₩ lb 28c

Circles 24 in. diameter and over ₩ lb 31c

Segment and Pattern Sheets ₩ lb 28c

Locomotive Fire Box Sheets ₩ lb 26c

Sheathing Copper, over 12 oz. ₩ sq. ft. ₩ lb 24c

Bolt Copper ₩ lb 26c

Copper Bottoms ₩ lb 31 @ 26c

No Copper is Sheathing except 14x48 inches, and not to exceed 34 oz. to the sq. ft.

TINNING.

Sheets 14 X 28 ₩ sheet 8c

All other size Sheets, 29c ₩ sq. ft.

For tinning both sides, double the above amount.

O'NEILL'S PATENT PLANISHED COPPER.—Net.

14x48.

32 and 16 oz. and heavier	₩ lb	37c
By the case	₩ lb	36c
32 oz. and lighter	₩ lb	40c
"	₩ lb	39c

Boiler Sizes.

7 in., 14x52. 8 in., 14x56. 9 in. 14x60.

32 and 16 oz. and heavier	₩ lb	39c
By the case	₩ lb	38c

(And all sizes not over 20 in. wide.)

24x48&30x60.

32 and 16 oz. and heavier	₩ lb	41c
32	₩ lb	44c

SHEATHING METAL.

Yellow Sheathing metal ₩ lb 20 @ 22c

BRASS.

Brown & Sharpe's Gauge the Standard for Metals. Old English Gauge the Standard for Wire.

BRASS MANUFACTURERS' PRICE LIST.—dis. 30 %. June 10. 1880.

Cash prices for Roll and Sheet Brass. For less quantities than 100 lbs add 3c. ₩ lb.

HIGH BRASS.

All Nos. not thinner than No. 28, wider than 2 in., not wider than 14 in. 30c

All Nos. to No. 28, inclusive, and widths over 14 to 20 in. inclusive 35c

All Nos. to No. 28, inclusive, and widths over 20 to 30 in., inclusive 38c

6c. ₩ lb advance on each No. above Nos. 28 to 36, inclusive.

All Brass thinner than No. 38 is Platers' Brass, at 53c

Sheets 24x48, and all sheets cut to particular sizes and lengths under 30 in., in width wider than 2 in. 37c

Printers' Rules 45c

Sheets wider than 30 in. and under 40 in. 47c

" 40 in. and over 50c

Circular Sheets, in diam. from 4 in. to 14, inclusive 40c

" over 14 " 20, " 45c

" " 20 " 30, " 49c

" " 30 " 40, " 55c

" " 40 in. 59c

LOW BRASS.

Four cents ₩ lb more than High Brass.

Gilding Metal, 8c ₩ lb more than High Brass.

Platers' or Gold Metal { In Bars 43c; Sawed 51c; Planed or Polished 54c

FOR SLITTING.

Metal, in width 1 in. to ⅛ in. to No. 28, inclusive, 1c ₩ lb advance.

Metal, in width 2 in. to 1 in thinner than No. 28, 2c ₩ lb advance.

Metal, in width 1 in. to ⅛ in. thinner than No. 28, 3c ₩ lb advance

Metal in width ⅛ in. to ¼, inclusive, not thinner than No. 28, 2c ₩ lb advance.

Metal in width ⅛ in. to ¼ thinner than No. 28, 5c ₩ lb advance.

Metal, ¼ in. in width and less, 10c ₩ lb advance.

Any of the above widths cut to particular lengths, add 7c ₩ lb.

GERMAN SILVER MARKET METAL AND WIRE.

	Market Metal.	Wire
1 per cent., 12 inch to No. 26	$0.52	$0.70
2 " " "	.56	.76
3 " " "	.64	.88
4 " " "	.74	1.03
5 " " "	.82	1.12

German Silver Sheets over 12 in. wide and weighing more than 10 lb., $4 ₩ lb.

Advance 2c. for each additional inch in width above 12 in. and 2c. ₩ lb on each No. thinner than Nos. 26 to 12, inclusive.

All German Silver thinner that No. 36 is Platers', at 50c. ₩ lb additional.

German Silver Scrap, one-half less than net price of 12 in. Market Metal. German Silver Turnings. Filings and Chips, half the price of Scrap.

BRASS AND COPPER WIRE.

	High Brass.	Low Brass.	Gild'g and Copper.
No. 0 to 20	$0.33	$0.37	$0.48
No. 21	.36	.40	.46
No. 22	.37	.41	.47
No. 23	.38	.42	.48
No. 24	.40	.44	.50
No. 25	.43	.47	.53
No. 26	.44	.49	.55
No. 27	.48	.53	.58
No. 28	.52	.58	.63
No. 29	.55	.59	.66
No. 30	.58	.63	.72
No. 31	.62	.66	.78
No. 32	.66	.70	.84
No. 33	.70	.74	.93
No. 34	.74	.78	1.03

Spring Wire 20c ₩ lb advance

Flat Square and Half-Round Wire 5c ₩ lb advance on Round Wire.

Fancy Wire not less than 10c ₩ lb advance on Round Wire.

Brass Rods, No. 8 and larger, not less than 2 feet lengths, 38c.

Wire straightened and cut smaller than No. 8 and not less than 2 feet lengths, 43c.

Wire and Rods less than 2 feet lengths, special rates.

Twelve cents per lb extra for spooling on 1 lb spools No 36.

MISCELLANEOUS.

Brass Rail Ears	$0.50
Brass Door Rail	.43

SCRAP.—Net.

High Brass Scrap	12c
Low Brass Scrap	14c
Gilding	16c

Turnings, Filings and Chips half the price of Scrap.

Terms—Net cash. Interest to be added after thirty days.

TUBING.—dis. 30 %. ₩ lb

Plain to No 20 inclusive above ¼ in. to 3 in.	$0.42
Plain above 3 in.	.52

Nos. 21, 22, 23, two cents advance on List for each Number.

Nos. 24, 25, 26, four cents advance on List for each Number.

Above No. 26, special rates.

Plain, ¼ inch 7c

Plain, 3-16 inch 1.1c

Plain, ⅛ inch 1.0c

All Mandrel Drawn Tubes, 5 cents advance on List Prices.

Fancy Tubing to No. 20 5c

English, Scotch and Extra Patterns Fancy Tubing to No. 20 5%

Tubing Sawed or Cut 2 to 4 feet long, 2 cents advance on List

Add two cents, ¼ cent for each additional cutting under 2 feet.

All Mandrel Drawn Tubes under 25 in. 3½c ₩ lb advance.

ZINC TUBING—dis. 25 %.

Plain	27
Fancy	33
Scotch and Extra Patterns	36

GERMAN SILVER TUBING.—dis 25 %.

4 Per cent.	.80
6 Per cent.	.90
9 Per cent.	1.00
12 Per cent.	1.20
15 Per cent.	1.34
15 Per cent.	1.45
18 Per cent.	1.40
20 Per cent.	1.60

STEEL.—DUTY: Ingots, Bars, Sheets, &c., valued at 3c ₩ lb or less, 45 % ad val. Valued above 4c and not above 7c ₩ lb, 2c ₩ lb; valued above 7c and not above 10c ₩ lb, 2½c ₩ lb; valued above 10c ₩ lb, 3½c ₩ lb. *Extras.* Steel bars, rods, &c., cold hammered or polished, in any way in addition to ordinary hot rolling, ½c ₩ lb in addition to above. Steel Circular Saw Plates, 1c ₩ lb in addition to the above.

American Cast Steel.

For American Steel see quotations under heading of Pittsburgh.

English Steel.

Best Cast	₩ lb	15½c
Extra Cast	₩ lb	16½c
Circular Saw Plates	₩ lb	16c
Round Machinery, Cast	₩ lb	10c
Swaged, Cast	₩ lb	18c
Best Double Shear	₩ lb	14½c
Blister, 1st quality	₩ lb	13c
German Steel, Best	₩ lb	11c
2d quality	₩ lb	10c
3d quality	₩ lb	9c
Sheet Cast Steel, 1st quality	₩ lb	15½c
2d quality	₩ lb	14½c
3d quality	₩ lb	12½c

ANTIMONY See Trade Report

LEAD.—DUTY: Pig, $2 ₩ 100 lb Old Lead, 2c ₩ lb

Pipe and Sheet, 3c ₩ lb.		
American		4½ @ 5¾c
Bar		6c
Pipe		6¾c, dis 10 %
Tin Lined Pipe		11c, dis 10 %
Sheet		7½c, dis 10 %
Shot		Drop 7c, Buck. 8c
Chilled Shot		8c

BABBITT METAL.

N. P. U.	₩ lb	8c
A. 28c; B. 25c; C. 17c.		

TIN.—DUTY: Plates, Sheets, Tagger and Terne, 1c ₩ lb; Bars, Block and Pigs free.

Banca	₩ lb	23½c
Straits	₩ lb	22½c
English	₩ lb	23 c

TIN PLATES.

I C 10x14 } I C 14x20 }	Prime Charcoal	$6.25 @ 6.75
Second quality		$5.75 @ 6.25
I C 12x12	Prime Charcoal	6.50
I X 10x14 } I X 14x20 }	Prime Charcoal	7.75 @ 8.00
Second quality		$7.25 @ 7.50
I X 12x12.	Prime Charcoal	8.25
D C 12½x17,	Prime Charcoal	5.75
D X 12½x17,	Prime Charcoal	7.25
For each additional X add		1.50

COKE TIN PLATE.

	Best.	Ordinary.
I C 10x14 } I C 14x20 }	$5.50	$5.15 @ 5.40
I C 12x12	5.75	5.40 @ 5.50

TERNE PLATE.

	Prime Char.	2d Qual.	Coke.
I C 14x20	$5.50 @ 6.25	5.25	5.12½
I X 14x20	7.25 @ 7.50	....	....
I C 20x28	11.00 @ 11.50	10.50 @ 10.75	10.00 @ 10.25
I X 20x28	14.50 @ 15.00	....	....
I C 20x200	13.50	....	....

I C 14x20 M. F. Brand $7.75

SOLDER—⅓ & ½ 15c

Extra 13½c

No. 1 12 c

SPELTER.—DUTY: In Pigs, Bars and Plates, $1.50 ₩ 100 lb.

American, cash	5.00 @ 5.25

ZINC.—DUTY: Pig or Block, $1.40 ₩ 100 lb: Sheet 2½c ₩ lb.

Sheet, Cask	6 @ 6¼c
Sheet, Open	6¾ @ 7c

Paper Stock, &c.

(Dealers' Selling Prices.)

	Cents ₩ lb.
White Shirt Cuttings No. 1	7 @ 7¼
White Shirt Cuttings, No. 2	6¼ @ 6
Mill Assorted Whites	5¼ @ 5¾
Unbleached Muslins	6¼ @ 6¾
City Whites, No. 1	4¼ @ 4¾
New Canton Flannels	@ 6¼
New Seconds, light	3¼ @ 3¾
New Seconds, dark	2¾ @ 3
No. 2 Whites	2½ @ 2¾
Cotton Canvas	4½ @ 4¾
Linen Canvas, No. 1	4¼ @ 4½
Seconds, City No. 1	1¾ @ 1¾
Seconds, City No. 2	1 @ 1¼
Colors, per cwt.	70 @ 90
Manila Rope	@ 3¾
Manila Rope, Tarred	2¾ @ 3¼
Gunny Bagging, No. 1	1¾ @ 2
Gunny Bagging, No. 2	1½ @ 1¾
Kentucky Bagging	4 @ 4¼
Burlap Bagging, No. 1	2¼ @ 2½
Tar Shakings	2 @ 2¼
Hemp Twine Stock	4¼ @ 4½
Hard White Shavings, No. 1	4 @ 4¼
Soft White Shavings, No. 1	3¼ @ 3½
White Shavings, No. 2, soft	@ 3
Mixed shavings, part white	2½ @ 3
Ledger and Writing	3 @ 3¼
Solid Stock	2½ @ 2¾
Book Stock, No. 1, light	1¾ @ 1¾
Old Newspapers	1¼ @ 1¾
Pure Manilas	1¾ @ 2
Bogus Manilas and Hardwares	¾ @ 1
Commons per 100 lbs	60 @ 70
Binders' Board Cuttings	⅞ @ 1
Straw Board Cuttings per cwt	70 @ 75

Paints, Oils, &c.

Paints.

Black Lamp, Coach Painters	₩ lb	22 @ 24c
Black Lamp, Ordinary	₩ lb	8c
Black Ivory Drop, fair		12 @ 15c
Black Ivory Drop, best		23c
Black Paint, in oil	kegs 8c; asst'd cans, 11c	
Blue Prussian, fair to best		40 @ 45c
Blue Prussian, fair to best, in oil		45 @ 55c
Blue Chinese dry		70c
Blue Ultramarine		18 @ 30c
Brown, Spanish		14c
Brown, Van Dyke		10 @ 12c
Green, Chrome		15 @ 23c
Green, Chrome, in oil		14 @ 18 @ 24c
Green, Paris	good, 20c; best, 25c	
Green, Paris, in oil	good, 30c; best, 45c	
Iron Paint, Bright Red	₩ lb	2½c
Iron Paint, Brown	₩ lb	1½c
Iron Paint, Purple	₩ lb	5 c
Iron Paint, Ground in oil, Bright Red	₩ lb	6½c
Iron Paint, Ground in oil, Red	₩ lb	5½c
Iron Paint, Ground in oil, Brown	₩ lb	5½c
Iron Paint, Ground in oil, Purple	₩ lb	6 c
Mineral Paints		2 @ 4c
Orange Mineral		10c
Red Lead, American		7c
Red Venetian (Eng.) dry		$1.65 @ $1.75
Red Venetian, in oil	asst'd cans, 11c; kegs, 8c	
Red Indian dry		5 @ 13c
Rose Pink		10 @ 13c
Sienna, American, Raw, powdered		4c
Sienna, Burnt, powdered		4½c
Sienna, Burnt, in oil		10 @ 16 @ 20c
Sienna, Raw		11 @ 15 @ 25c
Umber, Burnt, powdered		4 @ 8c
Umber, Burnt, in oil		9 @ 12 @ 16c
Umber Raw, powdered		3½ @ 7½c
Umber, Raw, in oil		10 @ 15 @ 45c
Vermilion, Chinese		90c
Vermilion, English		40 @ 45c
Vermilion American, Common		15c
White Lead, American, pure dry		6¾ @ 6¾c
White Lead, American, pure in oil		6¾ @ 7c
White, Paris, English, prime	in bbls. 2 @ 2½c	
Yellow Ochre, French		$1.75
Yellow Ochre, French, in oil	asst'd cans, 11c; kegs, 8c	
Yellow Ochre, Vermont	in casks, 1½c	
Yellow Chrome		17 @ 27c
Yellow Chrome, in oil		14 @ 18 @ 24c
Zinc White, American No. 1, dry		5 @ 8c
Zinc White, American No. 1, in oil		9c
Zinc White, French (Paris) dry		10 @ 11c

Oils.

Linseed Raw, in casks and bbls		56 @ 57c
Linseed Boiled, in casks and bbls		59 @ 60c
Linseed, Calcutta		58 @ 59c
Bleached Whale	₩ gal.	95c
Bleached Sperm	₩ gal.	$1.20
Bleached Elephant		70c
Signal		75c
Prime Lard		60c
No. 1 Extra		63c
West Virginia		12c @ 18c
Drilling		40c
Miners' Oil		30c @ 42c
Fish Oil, pressed		42c @ 45c
Neatsfoot		70c @ 80c
Tallow		70c @ 75c
Empire Cylinder Oil		65c
Machinery		40c
Engine		40c

Sundries.

Asphaltum Cuban		6½c @ 9½c
Asphaltum Egyptian		9c @ 10c
Benzine	₩ gal.	80 @ 100
Chalk		80c
Chalk, Block		90c
Dryers Patent Am'n	asst cans, 9c: kegs	7c
Frostings		4@8
Glue, White		24 @ 35c
Glue, Sheet		20c
Glaziers' Points, Zinc		8c
Gum, Copal		36c
Gum, Damar		24c
Gum Shellac, English		40c
Gum Shellac, English, dark		35c
Litharge		7½c
Mineral Wool, ordinary	₩ lb	2 @ 14c
Mineral Wool, extra	₩ lb	3 @ 3½c
Pumice Stone, selected Lumps		4 @ 6c
Pumice Stone, Powdered		2½c
Pine Tar, bbls		$3.25
Pitch		$1.90
Putty, in bladders		3c
Putty, in bulk		2½c
Rosin—Common and Good—Strained		$1.90
E & F		$2.10 @ $2.20
G & H		$2.30 @ $2.50
I & K		$2.60 @ $2.80
M & N		$3.00 @ $3.25
Spirits Turpentine		41 @ 42c
Whiting Spanish		8c
Waste, No. 1 Cop		10c
Waste, No. 1 White Machine		10c
Waste, No. 2 White Machine		9½c
Waste, No. 1 Colored		7c
Waste, No. 2 Colored		6½c
Waste Washed Machine		c

Glass.

Prices current per box of 50 feet.
List, July 2, 1883.

Single.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$13.50	$11.50	$10.75	$10.25
11 x 14 to 16 x 24	14.50	13.50	12.50	11.50
18 x 22 to 20 x 30	18.50	17.00	15.50	14.00
15 x 36 to 24 x 30	20.50	18.50	16.25	
26 x 28 to 24 x 36	22.00	20.00	17.50	
26 x 36 to 26 x 44	24.00	22.00	18.50	
26 x 46 to 30 x 50	26.00	24.00	20.50	
30 x 52 to 30 x 54	27.00	25.00	21.50	
30 x 56 to 34 x 56	29.00	27.00	24.00	
34 x 58 to 34 x 60	31.00	29.00	26.00	
36 x 60 to 40 x 60	35.00	31.00	29.00	

Double.

SIZES.	1st.	2d.	3d.	4th.
6 x 8 to 10 x 15	$17.50	$15.00	$14.00	$13.00
11 x 14 to 16 x 24	20.00	18.00	16.50	
18 x 22 to 20 x 30	24.00	22.00	20.00	
15 x 36 to 24 x 30	26.50	24.00	21.00	
26 x 28 to 24 x 36	29.00	26.00	23.00	
26 x 36 to 26 x 44	30.00	28.00	24.00	
26 x 46 to 30 x 50	33.00	31.00	27.00	
30 x 52 to 30 x 54	35.00	32.00	28.00	
30 x 56 to 34 x 56	37.00	34.00	30.00	
34 x 58 to 34 x 60	40.00	37.00	33.00	
36 x 60 to 40 x 60	43.00	40.00	37.00	

Sizes above—$15 per box extra for every 5 inches. An additional 10 per cent. will be charged for all Glass more than 40 inches wide. All sizes above 52 inches in length, and not making more than 81 united inches, will be charged in the united 84 inches bracket. Discount, 70, 10 and 5.

Wholesale Hardware Prices, September 26, 1883.

(For Wholesale Metal Prices See Page 29.)

HARDWARE.

Anvils.
Eagle Anvils American........ ⅌ ℔ 10c—dis 20 %
Wright's........11c @ 11¼c
Armitage's Mouse Hole........9½c @ 9¾c
Armitage's Mouse Hole (extra quality)........11¼
Trenton........10½c
Wilkinson's........10½c

Anvil Vise and Drill.
Millers Falls Co., $18.00........dis 20 %
Cheney Anvil and Vise........dis 33⅓ %

Augers and Bits.
Conn. Valley Mfg. Co. / Douglass Mfg. Co. / C. E. Jennings & Co. / Humphreysville Mfg. Co. / Ives / Beecher (French, Swift & Co.) / Griswold / Nobles Mfg. Co. / Snell Mfg. } dis 55@60 % from list of Jan. 7, 1880.
Cook's Douglass Mfg. Co........dis 40&10 %
Patent Solid Head........dis 30 %
Lewis' Patent Single Twist........dis 45 %
Russell Jennings' Auger, Dowel, Machine-Dowel and Hand Rail Bits........dis 10&10&10 %
Russell Jennings' Augers........dis 16⅔&10&10&10 %
Russell Jennings' Car and Machine Bits, Boring-Machine and Millwrights' Augers........dis 25&10&10&10 %
Imitation Jennings' Bits........dis 50 %
Ives' "Jennings'" Bits........dis 40&10 %
Snell Mfg. Co.'s Jennings' Bits........dis 40 %
Expansive Bits, Clark's, small, $18; large, $26..dis 25 %
Expansive Bits, Ives'........$20@$30—dis 33⅓&10 %
Expansive Bits, Blake's........$20—dis 40 %
Expansive Bits, Derby, $17 and $26........dis 40&10 %
Hollow Augers, Ives / Hollow Augers, French, Swift & Co. } dis 25 %
Hollow Augers, Douglass'........25 %
Hollow Augers, Bonney's Adjust. ⅌ dz. $48—dis 25&10 %
Hollow Augers, Stearns' Adjust. ⅌ dz. $48—dis 20&10 %
Hollow Augers, Ives' Expansive, each $4.50—dis 30&10 %
Hollow Augers, Universal Expan., each $4.50—dis 20 %
Wood's........dis 25 %
Gimlet Bits........$7.50 ⅌ gross, dis 50 %
Gimlet Bits, Diamond........⅌ doz. $1.10, dis 25&10 %
Gimlet Bits "Bee"........dis 25 %
Double Cut Gimlet Bits, Shepardson's........dis 45 %
Double Cut Gimlet Bits, Ct. Valley Mfg. Co. dis 30&10 %
Double Cut Gimlet Bits, Hartwell's........dis 60 %
Double Cut Gimlet Bits, Douglass'........dis 40 %
Double Cut Gimlet Bits, Ives'........dis 50 %
Morse's Bit Stock Drill........dis 25&10 %
Holtz Bit Stock Drills........dis 25&10 %
L'Hommedieu's Ship Augers........dis 15 %

Awl Hafts.
Sewing, Brass Ferrule........$3.50 ⅌ gross—dis 40&10 %
Patent Sewing, Short........$1 00 ⅌ doz.—dis 40&10 %
Patent Sewing, Long........$1.20 ⅌ doz.—net
Patent Peg, Plain Top........$10.00 ⅌ gross—dis 40&10 %
Patent Peg, Leather Top..$12.00 ⅌ gross—dis 40&10 %

Awls, Brad Sets, &c.
Awls, Sewing, Common........⅌ gross $1.70—dis 25&10 %
Awls, Shouldered Peg........⅌ gross $2.45—dis 25&10 %
Awls, Patent Peg........⅌ gross 65c—dis 25&10 %
Awls, Shouldered Brad........⅌ gross $2.70—dis 25&10 %
Awls, Handled Brad........$7.50 ⅌ gross—dis 25&10 %
Awls, Handled Scratch........$7.50 ⅌ gross—dis 25&10 %
Awls, Socket Scratch........$1.50 ⅌ gross—dis 10&10 %
Brad Sets, Aiken's........⅌ doz $10.00—dis 50&10 %
Millers Falls Adj. Tool Hdles........⅌ doz $12—dis 25 %
Brad Sets, No. 42, $10.50; No. 43, $12.50........dis 70&10 %
Brad Sets, Stanley's Excelsior, No. 1, $9.00...dis 30&10 %
Brad Sets, Stanley's Excelsior, No. 2, $1.80...dis 30&10 %
Brad Sets, Stanley's Excelsior, No. 3, $7.80...dis 30&10 %

Axes.
Single Bit, 4½ to 5¼ and under........⅌ doz 8.00 net
Single Bit, 4½ to 6 and over........⅌ doz $8.50 net
Single Bit, beveled........50c ⅌ doz advance
Double Bit, 4½ to 5¼ and under........⅌ doz $15.00 net
Double Bit, 4½ to 6 and over........⅌ doz $16.00 net
Double Bit, beveled........$1.00 ⅌ doz advance

Axle Grease.
Frazer's........⅌ ℔ 6c

Axles.
Standard list........dis 45 %

Balances.
Spring Balances........dis 33⅓ %

Bells.
Hand, Light Brass........dis 70&10 %
Hand, Extra Heavy........dis 45 %
Hand, White Metal........dis 60 %
Hand, Silver Chime........dis 20&10 %
Hand, Globe (Cone's Patent)........dis 25&10 %
Gong, Abbe's........dis 20&10 %
Gong, Yankee........dis 30&10 %
Gong, Barton's........dis 30&10 %
Crank, Taylor's........dis 25 %
Crank, Brooks'........dis 50&10&2 %
Crank, Cone's........dis 10 %
Crank, Connel's........dis 15&10 %
Lever Sargent's........dis 55&10 %
Lever, Taylor's Bronzed or Plated........net
Lever, Taylor's Japanned........dis 25&10 %
Lever, R. & E. M. Co.'s........dis 50&10&2 %
Lever, Reading........dis 25&10&10 %
Pull, Brook's........dis 50&10&2 %
Pull, Western........dis 25&10 %
Call........dis 25 %
Cow, Common Wrought........dis 55&10 %
Cow, Western........dis 20&10 %
Cow, Western, Sargent's new list........dis 60&10&10 %
Cow, Kentucky "Star"........dis 20&10 %
Cow, Kentucky Sargent's new list........dis 60&10&10 %
Cow, Dodge' Genuine Kentucky, new list—
Nos. 0 1 1½ 4 5 6 Hog
$12.00 10.0 0.0 8.00 -.00 5.00 3.50 2.50 5.00 } dis 60 %
Cow, Texas Star........dis 40&10 %

Bellows.
Blacksmiths Common........dis 45 %
Blacksmiths' Extra Pittsburgh Pattern........dis 20 %
Molders'........dis 25 %
Hand Bellows........dis 20 %

Belting, Rubber.
Belting and Packing Co........dis 50 %

Bit Holders.
Extension, Barber's........⅌ doz $15.00—dis 40&5 %
Extension, Ives'........⅌ doz $15.00—dis 40 %
Diagonal........⅌ doz $24.00—dis 40 %
Angular........⅌ doz $24.00—dis 40&5 %

Blind Adjusters.—Domestic..⅌ doz $3.00—dis 30 %
Excelsior........⅌ doz $16.00—dis 50&10&2 %

Blind Fasteners.
Mackrell's........⅌ doz pairs, $1.00 dis 20&10 %
Van Sand's Screw Pattern........$9 ⅌ gro. dis 10&2 %
Van Sand's Old Pattern........$9 ⅌ gro dis 10&2 %
Washburn's Old Pattern........$9 ⅌ gro. net
Merriman's........new list, net
Salisbury & Austin, No. 2008........$9 per gro. net
Security Gravity........$9 per gross. net

Blind Staples.
Bar bed, ⅜ in. and larger........⅌ ℔ 9½c net
Bar bed ⅜ in........⅌ ℔ 11½c net

Blocks.
Penfield Block Co., I. R. and I. Strap'd........dis 40 %
Penfield Block Co., W. I. C. bushed........dis 40 %
Penfield Block Co., W. I. all steel roll'r........dis 20 %
Penfield Block Co., L. & I Sheaves........dis 40 %
(New List.)
Stanley Rule & Level Co.'s........dis 40&10 %

Bolts.
Cast Iron Barrel Square, &c........dis 55&10 %
Cast Iron Shutter Bolts........dis 60&10 %
Cast Iron Chain (Sargent's list)........dis 65&10 %
Ives' Patent Door Bolts........dis 55&10 %
Wrought Barrel........dis 55&10 %
Wrought Square........dis 55&10 %
Wrought Shutter, all Iron, Stanley's list........dis 50&10 %
Wrought Shutter, Brass Knob, Stanley's list........dis 50&10 %
Wrought Shutter, Sargent's list........dis 55&10 %
Wrought Sunk Flush, Sargent's........dis 75&10 %
Wrought Sunk Flush, Stanley's........dis 40&10 %
Wrought B. K. Flush. Com'n Stanley's........dis 55&2½ %
Carriage and Tire Common........dis 80&15 @ 80&20 %
Carriage and Tire, Philadelphia, new list........dis 70 %
Carriage and Tire, Philadelphia Pattern........dis 70 %
R. B. & W. Carriage (old list)........dis 70 %
Tire, Am. Screw Co.'s, Phila., new list, July 2 1883........dis 80 %
Tire, "Bay State," new list, July 2, 1883........dis 65 %
Tire, R. B. & W., new list........dis 75&10 %
Stove—American Screw Co.'s........dis 50 %
Stove, R. B. & W........dis 45 %
Stove, R. & E. Mfg. Co........dis 50 %
Plow........dis 50 %
Plow, R. B. & Co........dis 45 %
Machine........dis 60&10 %
Bolt Ends........dis 60&10 %

Borax.........15½c ⅌ ℔ net

Boring Machines. Upright / Angular
First quality, no Augers........$5.50 / $6.75........dis 50 %
Phillips, with Augers........7.00 / 7.50........net
Jennings & Co., no Augers........5.50 / 6.75........dis 45 %
Saunders' Patent, Regular Bed, $6.00........dis 20 %
Saunders' Patent, Extra Bed, $6.50........dis 20 %

Braces.
G. S. Backus........dis 50&5 %
Barber's........dis 40&5 %
Spofford's Patent........dis 50&5 %
Ives' Patent Braces........dis 55@55&5 %
Common Ball (American)........dis 55 %
Amidon's........dis 50 %
Barker's Imp'd........dis 55 %
Empire........dis 30 %
Buffalo Ball........dis 40 %

Brackets.
Shelf, plain........dis 50&10 %
Shelf, fancy........dis 60&10 %
Reading, Plain........dis 55&5&10 %
Reading, Rosette........dis 60&5&10 %

Bright Wire Goods.
List of June 25, '83........dis 70&10&— %

Bull Rings.
Union Nut Co........dis 55 %
Sargent's........dis 66⅔&10 %
Hotchkiss' low list........dis 15 %
Humason, Beckley & Co's........dis 66⅔&10 %
Peck, Stow & W. Co.'s........dis 33⅓ & 10 %

Butts.
Wrought Brass........dis 70@75 %
Cast Brass Tiebout's........dis 33⅓ %
Cast Brass, Corbin's Fast Joint........dis 20&10 %
Cast Brass, Loose Joint........dis 10&10 %
Fast Joint, Narrow........dis 45&10&10 %
Fast Joint, Broad........dis 45&10&10 %
Loose Joint........dis 55&10&10 %
Loose Joint, Japanned........dis 55&10&10 %
Loose Joint, Japanned with Acorns........dis 55&10&10 %
Parliament Butts........dis 55&10&10 %
Mayer's Hinges........dis 60&10&10 %
Loose Pin, no Acorn........dis 55&10&10 %
Loose Pin, Acorns........dis 55&10&10 %
Loose Pin, Acorns, Japanned........dis 60&10&10 %
Loose Pin, Acorns, Japanned, Plated Tips.dis 60&10&10 %

WROUGHT IRON.
Fast Joint, Narrow........dis 50&10 %
Fast Joint, Lt. Narrow........dis 50&10 %
Fast Joint, Broad........dis 50&10 %
Loose Joint, Broad........dis 55&10 %
Table Butts, Back Flaps, &c........dis 50&10 %
Inside Blind Regular........dis 50&10 %
Inside Blind, Light........dis 50&10 %
Loose Pin, Wrt........dis 55&10 %
Loose Pin, Light........dis 50&10 %
Spring Hinges:
Geer's Spring and Blank Butts........dis 30 %
Sabin Mfg. Co.'s Double Acting........dis 35 %
Union Spiral Spring, Japanned........dis 25 %
Union Spring Hinge Co.'s........dis 25 %
American Spring Hinge Co.'s........dis 30 %
Gem Spring Hinges........dis 30 %
Barker's Double Acting........dis 20 %
Union Mfg. Co........dis 25 %
Bommer's........dis 25 %
Buckman's........dis 25 %
Empire........dis 50&10 %
Acme........dis 65&10 %
Climax........dis 50&10 %
Blind Butts, Parker........dis 70&2 %
Blind Butts, Palmer........dis 50&10 %
Blind Butts, Seymour........dis 70&2 %
Blind Butts, Lull & Porter........dis 75&10 %
Blind Butts, Nicholson........dis 45&10 %
Blind Butts, Huffer........dis 50 %
Blind Butts, Clark's, Nos. 1, 3, 5........dis 70&2 %
Blind Butts, Sargent's, Nos. 1, 3........dis 66⅔&10 %
Blind Butts, Sargent's, No. 12........dis 70&10 %
Blind Butts, Reading's Gravity........dis 66⅔&10 %
Blind Butts, Shepard's "Noiseless," Nos. 50, 60, 65, 45 and 55........dis 70 %
Blind Butts, Shepard's "Gravity," Nos. 1, 3 and 5........dis 70&10 %
Shepard's Lull & Porter Shutter Hinges........dis 70&10 %
Shepard's Reversible Shutter Hinges........dis 70&10 %
Clark's Improved Shutter Hinge, Nos 0, 1, 1½, 2, 2½, 3........dis 60&10 %

Bow Pins.
Humason, Beckley & Co.'s, Nos. 1 and 2........dis 60 %
Humason, Beckley & Co.'s other Nos........dis 66⅔&10 %
Sargent & Co.'s........$19.70 and $21.40, dis 66⅔&10 %
Hotchkiss........dis 25 %
Peck, Stow & W. Co........dis 30&10 %

Butcher's Cleavers.
Humason & Beckley Mfg. Co........dis 25 %
Bradley's........dis 25 %
Beatty's........dis 25&5 %

1	2	3	4	5	6	7	8
$16.50	19.00	21.50	24.00	27.00	30.00	33.50	36 50

Calipers........see Compasses

Can Openers.—Messenger's Comet, ⅌ doz, $3.00........dis 25 %
American........⅌ gross $6.00, dis 25@30 %
Duplex........⅌ doz 25c, dis 15@20 %
Lyman's........⅌ doz $3.75, dis 20 %
No. 4, French........⅌ doz $2.25, dis 55 %
No. 5, Iron Handle........⅌ gross $6.00, dis 25@30 %
Eureka........⅌ doz $2.50, dis 10 %
Sardine Scissors........⅌ doz $7.00, dis 55 %
Star........⅌ doz $5.00, dis 25&5 %
Sprague, No. 1, $2.00; No. 2, $2.25; No. 3, $2.50........dis 50&10 %
"Worlds Best" ⅌ gross, No. 1, $12.00; No. 2, $24.00; No. 3, $30.00........dis 50 & 10 %
Universal........⅌ doz $3.00, dis 35 %
Domestic........⅌ doz $2.50, dis 45 %
Champion........⅌ doz $2.00, dis 50 %

Caps—Percussion, ⅌ 1000.
Hicks & Goldmark's
F. L. Waterproof, 1-10's........50c
E. B. Trimmed Edge, 1-10's........65c
E. B. Ground Edge, Central Fire, 1-10's........70c
Double Waterproof, 1-10's........$1.10
Pistol Waterproof, 1-10's........75c
Musket Waterproof, 1-10's........80c
} dis 10&5 %
G. D. & S. B........33c, dis 10 %
U. M. C., F. C. trimmed........50c / U. M. C., F. L. ground........70c } dis 15&10 %
U. M. C., Cen. fire ground........70c / U. M. C., Double W. Proof........$1.40 } dis 10&5 %
Double Waterproof, in 1-10's........$1.40 / Colt's Pistol, in 1-10's........75c } dis 10 %
F. L........50c / E. B. 1-10, trimmed........65c / E. B. 1-10, ground edge........70c } dis 10&5 %
Musket, in 1-10's........80c, dis 33⅓ %

Cartridges.—Rim........dis 70 &5 %
Central Fire........dis 50 %

Cards.—Horse and Curry........dis 10 %
Cotton........new list, Aug., '83, dis 10 %
Wool........new list, Aug., '83 dis 10 %

Carpet Stretchers.
Cast Steel, Polished........⅌ doz $5.00, dis 30 %
Cast Iron, Steel Points........⅌ doz $2.00, dis 50&5 %
Socket........⅌ doz $2.50, dis 25 %
Bullard's........dis 25 %

Casters.—Bed........dis 45@50 %
Plate........45@50 %
Shallow Socket........dis 35&10 %
Deep Socket........dis 33⅓ %
Martin's Patent (Phoenix)........dis 25 %

Cattle Leaders.
Humason, Beckley & Co.'s........dis 70&10 %
Sargent's........dis 70&10 %
Hotchkiss........dis 25 %
Peck, Stow & W. Co........dis 33⅓&10 %

Chain.
Trace, 6½-10-2........⅌ pair 79c
Trace, 6½-10-3........⅌ pair 70c } dis 35 %
Trace, 7-10-2........⅌ pair 80c
German Halter Chain, list of Dec. 31, 1881........dis 55 %
German Coil, list of Dec. 31, 1881........dis 55 %
Covert Halter, Hitching and Breast........dis 35&5 %
Oneida Halter Chain (old list)........dis 45 %
Galvanized Pump Chain........⅌ ℔ 9½c net
Jack Chain, Iron........dis 60&10 %
Jack Chain, Brass........dis 50&10 %

Chalk.
White........⅌ gross 60c net
Red........⅌ gross 80c net
Blue........⅌ gross $1.00 net
White Crayons........⅌ gross 10c net

Chalk Lines.—See Lines.

Chisels.
Socket Framing, Crossman........dis 65&10 %
Socket Framing, Arlington Edge Tool Co. / Socket Framing, Merrill / Socket Framing, Witherby Tool Co. / Socket Framing, Douglass' / Socket Firmers, Arlington Edge Tool Co. / Socket Firmers, Merrill / Socket Firmers, Witherby Tool Co. / Socket Firmers, Douglass' / Socket Corner } dis. 70 @ 70 & 10 %
Socket Framing and Firmer, Buck Bros........dis 25 %
Tanged Firmers........dis 15 %
Tanged Firmers, Butcher's........$5.00@$5.25 to £
Tanged Firmers, Spear & Jackson's........5.00 to £
Tanged Firmers, Buck Bros (Shank)........5.25 to £

Clamps.
Iron, Providence Tool Co.'s Wrt. Iron........dis 25 %
Iron, Adjustable, Gray's........dis 20 %
Iron, Adjustable, Lambert's........dis 20 %
Iron, Adjustable, Snow's........dis 40&5 %
Iron, Adjustable, Hammer's........dis 15 %
Iron, Adjustable, Stearns'........dis 20&10 %
Iron, Cabinet, Sargent's........dis 70&10 %
Iron, Carriage Makers', Sargent's........dis 65&10&10 %
Iron, Eberhard Mfg. Co........dis 33⅓ %
Saw Clamps........See Vises

Clips, Axle.
Norway or Best........dis 60&5 %
Superior........dis 60&5 %

Cockeyes.........dis 55 %

Cocks, Brass.
Racking / Globe / Plain Bibbs / Ale and Beer } dis........55 %

Coffee Mills.
Board and Box........dis 50 %
Wilson's........dis 50 %
Selsor's Flat........$9.50, $10.00, dis 25 %
American (Enterprise Mfg. Co.)........dis 20&10 %
The "Swift" (Lane Bros.)........dis 20&10 %
Webb's Patent........dis 45@50 %

Compasses, Dividers, &c.
Compasses........dis 60 %
Calipers........dis 60 %
Dividers........dis 60 %
Bemis & Call Co.'s Dividers........dis 60&5 %
Bemis & Call Co.'s Compasses and Callipers..dis 50&5 %
Bemis & Call Co.'s Wing & inside or outside..dis 50&5 %
Bemis & Call Co.'s Double........dis 60 %
Bemis & Call Co.'s (Call's Patent Inside)........dis 30 %
Excelsior........dis 50 %
Cook's Extension........dis 25 %
J. Stevens & Co's Calipers and Dividers........dis 25& 10%

Coopers' Tools.
Bradley's........dis 10 @ 20 %
Barton's........dis 20 %

Corkscrews.—Humason & Beckly Mfg.Co dis 33⅓ %
Clough's Pat........dis 33⅓ %

Corn Knives and Cutters.—Bradley's........dis 10 %
Wadsworths........dis 25 %

Crow Bars.
Cast Steel........⅌ ℔ 6½c
Iron, Steel Points........⅌ ℔ 5 c

Curling Irons, &c.
⅝, ¾, ⅞ in., $1.80, 2.00, 2.40........dis 10 %
Curling Tongs........⅌ doz $2.65, dis 10 %
Pinching Irons........⅌ doz $7.50, dis 20 %

Curry Combs.
Fitch's........dis 50&10 %
Hotchkiss, Novelty, new list, July 1880........dis 25 %
Hotchkiss, Exclr. Supr. Champion........dis 25 %
Rubber........⅌ doz $10.00, dis 25 %

Curtain Pins.
Silvered Glass........net
White Enamel........net

Cutlery.
Meriden Cutlery Co. (Table)........net
Am. Miller Bro.'s Cutlery Co........dis 25 %
Humason & Beckley, Pocket........dis 33⅓ %
Naugatuck Cutlery Co........list net
Aaron Burkinshaw's Pocket........dis 25 %

Dividers........see Compasses

Dog Collars.—Embossed Gilt........dis 30&10 %
Leather........dis 40 %
Brass........dis 40 %

Door Springs.
Torrey's Rod, regular size, ⅌ doz., $3........dis 50 %
Gray's Rod........per gross, $20 00, dis 15 %
Bee Rod........per gross, $20.00, dis 15 %
Warner's........dis 30 %
Gem (Coil):
No. 1, Large Japanned........⅌ doz $4.00
No. 2, Medium, Japanned........⅌ doz 2.75 } dis 50 & 10 %
No. 3, Small, Japanned........⅌ doz 2.00
Star (Coil)—For Cop'd, Nickel-Plated &c., see list.
No. 4 ("Shoo Fly") Screen door size, ⅌ doz $1.50
No. 5, Screen Door size........⅌ doz 2.00
No. 6, Medium........⅌ doz 2.75 } dis 60 %
No. 7, Large........⅌ doz 4.00
Sabin's Lever..No. 1, $1; 2, $1.50; 3, $2; 4, $2.50 .dis 35 %
Sabin's Boss. No. 1, ⅌ doz. $4.00; 2 $2.75; 3, $2.dis 33⅓ %
Sabin's Crown........⅌ doz $1.50, dis 33⅓ %
Philadelphia........5 in., $5.00; 8 in., $7.75, dis 35 %
Cowell's........No. 1, ⅌ doz. $18.00; No. 2, $15.00, dis 50 %
Rubber, complete........⅌ doz. $2.25, dis 20&10 %
Hercules........dis 40 %

Drawing Knives.
Arlington Edge Tool Co........dis 70 %
Crossman's No. 1........dis 65&10 %
Morrill........dis 70 %
Nobles Mfg. Co........dis 15 %
Bradley's........dis 35 %
Adjustable Handle........dis 20 %
Witherby Tool Co........dis 70 %
Douglass........dis 70 %

Drills and Drill Stocks.
Blacksmiths'........each, $2.50, dis 20 %
Blacksmiths' Self-Feeding........each, $7.50, dis 20 %
Breast, P. S. & W........dis 20&10 %
Breast, Hotchkiss'........dis 20 %
Breast, Wilson's........dis 25 %
Breast, Millers Falls........each, $3 00, dis 25 %
Breast, Bartholomew's........each, $2.50, dis 25&10 %
Ratchet, Merrill's........dis 20 %
Ratchet, Ingersoll's........dis 25 %
Ratchet, Whitney's........dis 20&10 %
Ratchet, Weston's........dis 20 %
Ratchet, Moore's Triple Action........dis 20&25 %
Whitney's Hand Drill, Plain, $11.00 Adjustable, $12.00........dis 20&10 %
Wilson's Drill Stocks........dis 10 %
Automatic Boring Tools........each, $7.25, dis 20 %

Drill Chucks.
Morse's Beach Patent........each $8.00, dis 20 %
Morse's Adjustable........each, $7.00, dis 20 %
Danbury........each, $8.00, dis 30 %

Egg Beaters.
Dover........⅌ doz. $2.50, dis 2 %
Monroe's........dis 50 %
National........⅌ doz. $4.50, dis 33⅓ %
Standard........⅌ gross, $18.00, dis 25 %
Family (T. & S. Mfg. Co.)........⅌ gross, $18.00, net
Acme........⅌ gross, $12.00, dis 25 %
Triumph (T. & S. Mfg. Co.)........⅌ gross, $11.50, net

Elevator Buckets.
Mill E. Buckets, light, 3½ to 10 in. (Duc's Improved), ⅌ 100, $15 00 @ $54.00........dis 10 %
Mill E. Buckets, heavy 5 to 10 in. (Duc's Improved), ⅌ doz. $5.60 @ $10.20........dis 10 %
Storehouse (Duc's Patent), 12 to 17, $12 @ $20........dis 10 %

Emery and Emery Paper.
Regular numbers........⅌ ℔ 6c
Flour and F. F........⅌ ℔ 4c
B. & A. Emery Paper........dis 30&5 %
Sibley's Emery and Crocus Cloth, large size, $10; medium, $10.50 ⅌ ream........dis 15 %

Enameled and Tinned Ware.
Kettles........dis 50 %
Sauce Pans........dis 25 %
Tinned Sauce Pans........dis 25 %

Escutcheon Pins.
Brass........dis 50 %

Escutcheons.
Door Lock........Same discounts as Door Locks
Brass Thread........dis 55 %
Wood........dis 25 %

Faucets.
Fenn's........dis 40 %
Bohren's Patent Rubber Ball........dis 25 %
Fenn's Cork Stops........dis 33⅓ %
Star........dis 55&10 %
Frary's Patent Petroleum........dis 20&10 %
West's Patent Key........dis 45 %
Anchor Lock........dis 45 %
Metallic Key, Leather Lined........dis 60 %
Cork Lined........dis 70 %
J. Sommer's Best Metallic Key........dis 40&10 %
J. Sommer's Cork Lined, 1st quality........dis 50 %
Self-Measuring, Enterprise........⅌ doz. $36.00, dis 20&10 %
Self-Measuring, Lane's........⅌ doz. 36.00, dis 20&10 %
Self-Measuring, Victor........⅌ doz. $36.00, dis 25&10 %

Felloe Plates........⅌ ℔, 10c, dis 25 %

Files.
J. & Riley Carr........new list April 1, '83, dis 15 %
J & Riley Carr Horse Rasps........dis 10%
Butcher's........
Moss & Gamble........new list, dis 15 %
H. Disston & Sons........dis 40 %
Nicholson........dis 40 %
New American........dis 40 %
Union File Co........dis 40 %
Heller Bros.' Files........dis 40 %
Heller Bros.' Horse Rasps........dis 30&10 %
Western........dis 40 %
Stubs........new list, dis 25@30 %

Fluting Machines.
Knox, 4½-inch Rolls........$3.50 each / Knox, 6-inch Rolls........$4.00 each } dis 35 %
Eagle 3½ inch Roll........$2.15, dis 35 %
Eagle, 5½-inch Roll........2.85, dis 35 %
Crown, 4½-in., $3.50; 6-in., $4.00; 8-in., $6.50 each, dis 35 %
Crown Jewel........6-in., $3.50 each, dis 35 %
American, 5-in., $3; 6-in., $3.40; 7-in., $4.50 each, dis 35 %
Domestic Fluter........$1.50 each, net
Geneva Hand Fluter, White Metal...⅌ doz $12, dis 25 %
Crown Hand Fluter, Nos. 1, $15; 2, $12.50; 3, $10.00 ⅌ doz........dis 30 %
Shepard Hand Fluter, No. 85........per doz $15, dis 40 %
Shepard Hand Fluter, No. 110........per doz $8.75, dis 30 %
Shepard Hand Fluter, No. 95........per doz $6.50, dis 20 %
Clark's Hand Fluter........⅌ doz $15.00, dis 33⅓ %
Combined Fluter and Sad Iron........⅌ doz $15.00, dis 30 %
Buffalo........⅌ doz $10.00, dis 10 %

Fluting Scissors........dis 45 %

Fly Traps.
Paragon........⅌ doz, $3, net

Forks.
Hay, Manure and Spading........dis 50 %
Plated, A 1, Rogers & Bro........dis 40&10&5 %
Plated, Reed & Barton........dis 40&10&5 %

Fruit and Jelly Presses.
Enterprise Mfg. Co........dis 20&10 %

Fry Pans.
Burnished list as follows........dis 60&10&5 %

No	0	1	2	3	4	5	6	7	8
⅌ doz	$3.00	3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00

"Acme"........dis 40&10 %

Gauges.
Marking Stanley's........dis 50&10 %
Marking, Chapin's........dis 55&10 %
Wire........dis 10&10 %
Wire, Disston's........dis 20 %
Wire, Wheeler, Madden & Co........dis 10 %

Gimlets.
Nail and Spike........dis 40&10 %
"Eureka" Gimlets........dis 40&10 %
"Diamond" Gimlets........dis 40&10 %
Double Cut, Shepardson's........dis 40&10 %
Double Cut, Hartwell's........dis 40&10 %
Double Cut, Ives'........dis 40&10 %
Double Cut, Douglass'........dis 40 %
"Bee"........⅌ gro. $12.00, dis 25 %

Glue Pots.
Tinned and Enameled........dis 33⅓ %
Family, Howe's "Eureka"........dis 25 %
Family, L. F. & C.'s "Handy"........dis 30&10 %

Grindstone Fixtures.
Sargents Patent........dis 70&10 %
Reading Hardware Co........dis 30&10 %

Gun Wads.
U. M. C. B. E., 11 up........$2.00
U. M. C. B. E., 9&10........2.30
U. M. C. B. E., 7&8........2.60
U. M. C. P. E., 11 up........3.10
U. M. C. P. E., 9&10........4 00
U. M. C. P. E., 7&8........4.90
} dis 5&5 %

Halters.
Covert's Pat. Rope........dis 50 %
Covert's Horse and Cattle Ties........dis 50 %
Union Pat. Rope and Web........dis 40&10 %
Union Horse and Cattle Ties........dis 40&10 %

Hammers.
Maydole's........dis 15 %
Cheney's, new list, March, 1883........dis 20&5 %
Hartford Hammer Co. (new list July 1, '81)........dis 20 %
Humason & Beckley........dis 15 %
Verree........dis 5 %
Magnetic Tack, Nos. 1, 2, 3, $1.26, 1.50 and 1.75.dis 25&10 %
Nelson Tool Works........dis 10&10 %
Warner & Noble's........dis 10 %
Yerkes & Plumb........dis 30 %
Wilkinson's Smiths'........11½c ⅌ ℔ net

Hand Cuffs and Leg Irons.
Providence Tool Co., Hand Cuffs, $15.00 ⅌ doz.dis 10 %
Providence Tool Co., Leg Irons, $25.00 ⅌ doz....dis 10 %
Tower's........dis 25 %

Handles.—Door or Thumb Latches.

Nos.	0	1	2	3	4	
Per doz.	$0.80	1.00	1.18	1.35	1.50	dis 60&10 %

Roggin's Latches........⅌ doz 35c, @ 40c, net
Bronze Iron Drop Latches........⅌ doz $0.80 @ 0.90 net
Jap'd Store Door Handles—Nuts, $1.62; Plate, $1.10; no Plate, $0.88........net
Barn Door........⅌ doz $1.60, dis 10&10 %
Wrought Chest........dis 70 %
Surface Chest........dis 60&10 %
Flush Chest........dis 70 %
Lifting........dis 60&10 %
Saw and Plane........dis 40&10 %
Boynton's Loop Saw Handles........50c, dis 50 %
Boynton's Centennial Saw Handles........30c, dis 25 %
Hammer and Hatchet........dis 20 %
Brad Awl........⅌ gross, $2.50 dis 10 %

Handles (Tool).
Hickory Firmer Chisel, assorted, ⅌ gross........$4.50
Hickory Firmer Chisel, large, ⅌ gross........5.00
Apple Firmer Chisel, assorted, ⅌ gross........5.00
Apple Firmer Chisel, large, ⅌ gross........6.00
Socket Firmer Chisel, assorted, ⅌ gross........3.00
Socket Framing Chisel, assorted, ⅌ gross........5.00
File assorted, ⅌ gross........2.75
Auger, assorted, ⅌ gross........5.00
Auger, large, ⅌ gross........7.00
} dis 20&10 @ 25&10
Patent Auger, Ives'........dis 20&10 %
Patent Auger, Douglass'........⅌ set $1.25 net
Patent Auger, Swan's........⅌ set $1.00 net

Hangers.
Barn Door, old patterns........dis 60&10 %
Barn Door, New England........dis 65&10 %
Climax (Anti-Friction)........dis 50 %
Challenge........dis 50 %
"Champion" Medina Mfg. Co........$15; dis 50&10 %
Sterling Improved (Anti Friction)........dis 65&10 %
Cheritree........dis 50 %
Kidder's........dis 50&5 %
U. S........4 in., $12; 5 in., $15; dis 60 %
The "Boss"........dis 50&10 %
Terry's Patent........5 in., $12; 3½ in., $10; dis 40 %
Cronk........No. 4, $12; No. 5, $14.40; No. 6, $21; dis 50

Harness Snaps.
Anchor (T. & S. Mfg. Co.)........dis 60@65 %
Henshaw's, list of 1⅛ changed to $14.00........dis 60@65 %
Judd's, list of 1⅛ changed to $14.00........dis 60 @ 65 %
Fitch's (Bristol), list of 1⅛ change to $14.00.dis 60 @ 65 %
Hotchkiss'........dis 10 %
Andrews'........dis 50 %
Sargent's........dis 70&10 %
German, low list, Sep., 1882........dis 33⅓ %
German, Sargent's new list........dis 60&10 %
Covert........dis 50 %
Covered Spring, new list, Oct., 1882........dis 60&10 %
Union........dis 50&10 %
Union Improved German........dis 60&10 %

Hatchets.
Isaiah Blood........dis 30 @ 35 %
Shingling, Nos. 1 2 3........⅌ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3........⅌ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3........⅌ doz 7.50 8.00 8.50
Hunt's........dis 25 %
Shingling, Nos. 1 2 3........⅌ doz $7.25 $8.00 $8.75
Claw, Nos. 1 2 3........⅌ doz 7.75 8.50 9.25
Lathing, Nos. 1 2 3........⅌ doz 7.30 .25 9.00
Hurd's........dis 30 @ 35 %
Shingling, Nos. 1 2 3........⅌ doz $8.00 $8.50 $9.00
Claw, Nos. 1 2 3........⅌ doz 9.00 9.50 10.00
Lathing, Nos. 1 2 3........⅌ doz 8.00 8.50 9.00
Yerkes & Plumb........dis 30 @ 35 %
Shingling, Nos. 1 2 2........⅌ doz $7.50 $8.00 $8.50
Claw, Nos. 1 2 3........⅌ doz 8.25 8.75 9.25
Lathing, Nos. 1 2 3........⅌ doz 7.50 8.00 8.50
Simmons'........dis 30 @ 35 %
Shingling, Nos. 0 1 2 3..⅌ doz $7 50 $8.00 $8.50 $9.00
Claw, Nos. 0 1 2 3..⅌ doz 8.50 9.00 9.50
Lathing, Nos. 0 1 2 3..⅌ doz 8.00 8.50 9.00
Broad, Nos. 1 2 3 4..⅌ doz 9.00 10.00 12.00 14.00
Broad, Nos. 5 6 7 8..⅌ doz 16.00 18.00 20.00 22.00
Collins........dis 10 %
Shingling, Nos. 1 2 3........⅌ doz $5.50 $6.00 $6.50
Claw, Nos. 1 2 3........⅌ doz 6.00 6.50 7.00
Lathing, Nos. 1 2 3........⅌ doz 5.50 6.00 6.50
Peck's Champion Blade........dis 30 @ 35 %
Shingling, Nos. 1 2 3........⅌ doz $8.00 $8.50 $9.00
Lath, Nos. 1 2 3........⅌ doz 8.00 8.50 9.00
Claw, Nos. 1 2 3........⅌ doz 9.00 9.50 10.00
Half, Nos. 1 2 3........⅌ doz 8.00 8.50 9.00
Ax Pattern, Nos. 1 2 3........⅌ doz 10.00 11.00 12.00

Hay Knives.
"Lightning"........⅌ doz $20.00 dis 10 %
Wadsworth's........dis 33⅓ %

Hinges.
Gate, Western........⅌ doz $4.90 dis 55 %
Gate, N. E........⅌ doz $7.70, dis 55 %
Gate, N. E. Reversible........⅌ doz $5.75, dis 55 %
Gate, Clark's, Nos. 1 2 3........dis 55 %
Gate, N. Y. State........⅌ doz $5.05, dis 55 %
Gate, Automatic........⅌ doz $12.50, dis 50 %
Gate, Common Sense........⅌ doz pair $4.50, dis 50 %
Gate, Seymour's........dis 45&10 %
Gate, Shepard's........Nos. 1, 2, 3, 10, 20 & 25, dis 50&10 %
Rolled Blind Hinges........dis 60&10 %
Rolled Plate........dis 60&10 %
Rolled Raised........dis 60&10 %
Plate Hinges "Providence" { 8, 10 & 12 in., $5.55 ⅌ 100 ℔; over 12 in., $4.50 ⅌ 100 ℔ }..dis 10 %
Screw Hook and Strap { 8, 10, 12 in., $7.00 ⅌ 100 ℔; 14 to 36 in. $5.75 ⅌ 100 ℔ }..dis 10 %
Heavy Welded Hook { 8 to 12 in., $7.00 ⅌ 100 ℔; 14 in & up, $5.50 ⅌ 100 ℔ } dis 10 %
Screw Hook and Eye........{ ⅞ & 1 in. 9c; ¾ in., 9c; ⅝ in., 10c; ½ in., 12c } dis 20 %
Wrought Strap and T........dis 60&10&2 % @ ——

Hoes.
Riveted Shank........⅌ doz $5.00, dis 50 %
Socket........⅌ doz $5.25, dis 50 %
Planters'........dis 50 %
Scovill Pattern........dis 50 %
Handled Planters'........dis 50%
Magic........⅌ doz $5 net
Grub........⅌ doz $11, dis 50 %

Hooks.
Bird Cage, Sargent's list........dis 60&10 %
Bird Cage, Reading........dis 40&10 %
Cotton........⅌ doz $4.00, dis 50 %
Cotton Patented (N. Y. Mallet & Handle W'ks), dis 30 %
Cotton (Humason & Beckley Mfg. Co)........dis 40 %
Belt........dis 60&10&10 %
Bench—Hotchkiss' $5.00 ⅌ doz........dis 10 %
Weston's. No. 1, $10.00; No. 2, $9.00 ⅌ doz, dis 25&10 %
McGill's, $3.00 ⅌ doz........dis 10 %
Clothes Line, Sargent's list........dis 65&10 %
Clothes line, Reading list........dis 45&5&10 %
Ceiling, Sargent's list........dis 60&10&10 %
Harness, Reading list........dis 40&10&10 %
Coat and Hat, Sargent's list........dis 60&10&10 %
Coat and Hat, Reading........dis 40&10&10 %
Wire Coat and Hat, Gem........dis 40&10 %
Wire Coat and Hat, Miles'........dis 70 %
Picture Hooks, Brown's Pat. Solid Brass, $4.00 ⅌ gross........dis 25 %
Tassel and Picture (T. & S. Mfg. Co.)........dis 50 %
Wrought Staples and Hooks & Staples..dis 70&7½&10 %
Wrought Staples, Stanley's list........dis 70&7½&10 %
Wire Screw Hooks and Eyes...new list, dis 70&10&— %
Grass and Bush........dis 45@50 %
Whiffletree—Patent........dis 40 %
Hooks and Eyes—Malleable Iron........dis 60&10 %
Hooks and Eyes—Brass........dis 60&10%

Horse Nails.

	Nos. 5	6	7	8	9	10	
Ausable, ⅌ ℔	31c	28c	26c	25c	24c	23c	dis 30&10 %
Clinton, Plain, ⅌ ℔		23c	21c	20c	19c	18c	dis 30&10 %
Clinton, Fin., ⅌ ℔		24c	22c	21c	20c	19c	dis 30&10 %
Essex, ⅌ ℔	31c	28c	26c	25c	24c	23c	dis 30&10 %
Putnam "	27c	24c	22c	21c	20c	19c	dis 5&7 %
Vulcan, "	26c	23c	21c	20c	19c	18c	dis 12½ %
Globe, "	24c	21c	19c	18c	17c	16c	dis 12½ %
A. C., "	26c	23c	21c	20c	19c	18c	dis 10&10 %
Ch'mpl'in Forged "	31c	28c	26c	25c	24c	23c	dis 30 %
New Haven, "	31c	28c	26c	25c	24c	23c	dis 30&10 %
Bridgewater, "	24c	21c	19c	18c	17c	16c	dis
Saranac, "	26c	23c	21c	20c	19c	18c	dis 25%

Horse Shoes.—Burden........⅌ keg $4.37½
R. I. Horse Shoe Co., Perkins' Improved Light, Medium and Heavy........⅌ keg $4.37½
Walker's Forged, Light, Med. or Heavy........⅌ keg $4.37½
Mule Shoes........⅌ keg $5.37½
Dunning's Steel........⅌ keg $9.25

Ice Awls, Chisels, &c.
American Ice Chisel........⅌ doz $3.00 net
National Ice Chisel........⅌ doz $6.25 dis 20 %
Novelty Ice Breakers........⅌ doz. $6.25 dis 20 %
White's Sliding Head Picks........⅌ doz $2 50 dis 40 %
Dunlap's Ring Picks........⅌ doz $2.00 dis 20 %
Wood Head Picks, Sargent's........⅌ doz $1 60 dis 50&10 %
Iron Head Picks, Sargent's........⅌ doz $1.25 dis 50&10 %
Ice Mallets, Pick in head........⅌ doz $1.75 dis 15 %
Ice Mallets, Pick in Handle........⅌ doz $2.00 dis 15 %
Ice Axes, Small Cast or Malleable..⅌ doz $1.20 dis 10 %
Combination Ice Tools........⅌ doz $2.00 net

Ice Cream Freezers.
Amn. Mch. Co........dis 40 %
Torrey's........dis 40 %
Packer's........dis 40 %

Ice Creepers.
Safety Reversible........⅌ gross $25 / Arctic Solid........⅌ gross $30 } dis 10 %

Ice Tongs.
Champion........⅌ doz $6.00 dis 25&10 %
Family........⅌ doz $2.75 dis 15 %

Kettles.
Brass, 7 to 13 inches inclusive........⅌ ℔ 28c net
Brass larger than 13 inches........⅌ ℔ 32c net

Knives.—Ames' Butcher Knives........dis 20 %
Ames' Shoe Knives........dis 15 %
Ames' Bread Knives........⅌ doz $1.50 dis 15 %
Moran's Shoe and Bread Knives........dis 20 %
Hay and Straw, Wadsworth's........dis 33⅓
Table and Pocket........See Cutlery

Knobs.
Carriage (Jap'd 80c ⅌ gross)........dis 60&10 %
Base—Common........dis 30&10 %
Hemacite Door Knobs........new list, dis 35&5 %
Door Mineral / Door Por. Jap'd / Door Por. Plated / Door Por. } Same discounts as Door Locks.
Furniture Plain........75c gross inch, dis 10 %
Furniture, Wood Screws........dis 20 %
Picture, Judd's........dis 60&10&10 %
Picture, Sargent's........dis 60&10 %
Hemacite, Picture........dis 35 %
Shutter, Porcelain........dis 60&10 %

Ladles.
Melting, Sargent's........dis 50&10 %
Melting, Reading........dis 30&10 %
Melting, Monroe's Patent........⅌ doz $4.00 dis 40 %
Melting, P. S. & W........dis 30&10 %

Lanterns.
Tubular........No. 0, $7.50; No. 1, $9.00 / With Guards, 40c extra } net
Nail City........No. 1 ⅌ doz $10; No. 2, $9, net
Meteor........No. 1, ⅌ doz, $9.50; No. 2 $8.50, net
Hurricane, No. 2........⅌ doz $5.75, net
Peerless, No. 5........⅌ doz $11.75, dis 10&10 %
Brady's Patent........dis 10&10 %
Ætna........dis 10&20 %
Yankee........dis 10&10 %
De Beque........dis 10&10 %
Police Small, $6.25; Med., $7.50; Large, $10.00, net
Convex Reflector........$2.7 ⅌ doz, dis 15 %

Lemon Squeezers.
Porcelain Lined........⅌ doz $6.00, dis 30 %
Wood........⅌ doz 3.00, dis 30 %
Eureka, Tinned........doz 8.00, dis 10 %
Dunlap's Improved........⅌ doz 2.75, dis 20 %
Sammis'...No. 1, $5; 2, $8.40; 12, $15 ⅌ doz; dis 25&10 %
Townsend's Patent........$6.00 ⅌ doz, dis 33⅓ %
Jennings "Star"........$2.00 ⅌ doz net
The "Boss"........⅌ doz $4.00, dis 10&10 %
Dean's Nos. 1, ⅌ doz, $15.00; 2, $9.00; 3, $5.00.dis 40&10 %

Lines.—Linen Fish........dis 25&10 %
Cotton Chalk........dis 55 %
Silver Lake, Braided, Nos. 0, $6.00; No. 1, $6.50; No. 2, $7.00; No. 3, $7.50 ⅌ gross........dis 20 %
Masons' Linen, No. 3½, $1.50; No. 4, $2; No. 4½, $2.50........net
Masons' Colored Cotton........dis 45 %
Wire Clothes, Galvanized........each 25c@40c net

Locks and Latches.
Cabinet, Eagle / Cabinet, Gaylord / Cabinet, Bridgeport } Changes made in list price of some numbers Jan. 1, 1881, dis 40 %
Cabinet, P. & F. Corbin........dis
Cabinet, A. E. Deitz........dis 30@40 %
Cabinet, Stoddard Lock Co........dis 40&5 %
Trunk, new list, Jan. 1, 1881........dis 15&2 %
Langstroth & Crane's List, Jan. 1, '77:
Round Key, Nos. 1 to 5........dis 40&10 %
Round Key, Nos. 5½ to 12........dis 40&10 %
Flat Key........dis 33⅓&10 %
A. E. Deitz, Flat Key........dis 30@40 %
Yale Lock Co., Flat Key........dis 40 %
"Shepardson" or "U. S."........dis 35 %
"Felter" or "American"........dis 33⅓ %
Plate........dis 33⅓&2 %
F. Many's "Extension Cylinder"........$10.50 ⅌ doz net
Barnes Mfg. Co........dis 40 %

DOOR LOCKS, ETC.
Branford / Norwalk / Norwich / P. & F. Corbin / Russell & Erwin / Mallory, Wheeler & Co. / Whipple Mfg. Co. } Circular Prices: Revised list of June 11, 1883, dis 50 % and 2 % for cash.
Reading Hardware Co. (low list)........dis 40&2 %
Padlocks—Russell & Erwin / Mallory, Wheeler & Co / Norwich Lock Mfg. Co. / Wm. Wilcox & Co } dis 30&10 % and 2 % for cash
Yale Lock Mfg. Co.'s "Standard"........dis 40 %
Romer's........dis 25 @ 40 %
Conestoga........dis 60 %
Scandinavian (Moore Bros.)........dis 80 %
J. H. McWilliams........dis 10 %
A. E. Dietz........dis 35 %
"Star"........dis 45 %
Fraim & Bro. (new list)........dis 50&10 %
Barnes Mfg. Co........dis 40 %

Lustr[illegible]........$17.00 net

Mallets.—Hickory........dis 10&10 %
Lignumvitæ........dis 10&10 %
Penfield Block Co., Lignumvitæ & Hickory........dis 30 %

Meat Cutters.
Dixon's (P.S.&W.) Nos. 1 2 3 4; ⅌ doz. $14.00 17.00 19.00 30.00—dis 25&5
Miles' Challenge........Nos. 1 2 3; ⅌ doz. $22.00 30.00 40.00—dis 40 %
Perry's, Nos. 1 2 3 4 4 g'rd 5 g'rd; Each $3.00 4.00 5.00 11.00 12.00 36 00—dis 25&5 %
Woodruff's (P. S. & W.)........Nos. 100 150; ⅌ doz. $15.00 18.00—dis 25&5 %
Hales'........Nos. 11 12 13; ⅌ doz. $27.00 33.00 45.00—dis 50&10&2 %
Draw Cut. Nos. 5 2 6 8 10; Each $50.00 75.00 80 00 225.00 100.00—dis 20 %
American........dis 20&10 %
Nos. 1 2 3 4 B; Each $5.00 7.00 10.00 25.00 50.00 60.00
Enterprise........dis 25 %
Nos. 10 12 22 2; Each $3.00 2.50 4.00 6.00 10.00
Kieser's No. 55........$40 ⅌ doz dis 40 %
Kieser's Gem........$25 ⅌ doz, dis 40 %
Kieser's Monarch........$45 ⅌ doz, dis 40 %
Kieser's Butcher........$40 each, dis 20 %
Silver & Deming........dis 25 %
Pennsylvania........dis 40&10 %
Nos 1 2 3 00; ⅌ doz $24.00 28.00 36.00 28.00
Beef Shavers (Enterprise Mfg Co.)........dis 20&10 %

Mincing Knives.
Am. (2d quality), ⅌ gross, 1 blade, $7 2 blades, $12 3 blades, $18........net
Lothrop's........dis 20&10 %
Smith's, ⅌ doz, Single, $2.25; Double, $3...dis 33⅓&10 %
Cowles Hdw. Co........dis 55 %

Molasses Gates.
Stebbins Patterns........dis 70&10 %
Stebbins Genuine........dis 67½&10 %
Stebbins Tinned Ends........dis 40&10&
Chase's Hard Metal........dis 50&10&
Bush's........dis 20 %
Lincoln's Pattern........dis 60&10 %
Weed's........dis 15 %
Boss Nos. 1 2 3 4; $7.00 8.00 9.00 10.00..⅌ doz. dis 60&10&10 %

Nails.........See Trade Report

Nuts and Washers...(In lots less than 100 ℔ ⅌ ℔ add ½c to list; 1 lb. boxes, add 1c to list.)
Square Nuts........8 c off list
Hexagon Nuts........8½c off list
Washers........7½c off list

Nut Crackers.
Table (Humason & Beckley Mfg. Co.)........dis 33⅓ %
Blake's Pattern........⅌ doz $2.00, dis 5 %
Turner & Seymour Mfg. Co........dis 50 %

Oakum.—Is on 100 bales and over ½ % ⅌ ℔.
Best........⅌ ℔ [illegible] c
U. S. Navy........⅌ ℔ [illegible] c
Navy........⅌ ℔ [illegible]c

Oilers.—Zinc and Tin........dis 60 %
Brass and Copper........dis 50 %
Malleable (Hammer's)........⅌ doz. $5.00, dis 10 %
Prior's Patent or "Paragon" Zinc........dis 60 %
Prior's Patent or "Paragon" Brass........dis 50 %
Olmstead's, Tin and Zinc........dis 60 %
Olmstead's, Brass and Copper........dis 50 %
Broughton's, Zinc........dis 60 %
Broughton's, Brass........dis 50 %

Packing, Steam.
N. Y. Belting and Packing Co........dis 20 %

Pencils.
Faber's Carpenters'........high list, dis 50 %
Faber's Round Gilt........⅌ gross $5.25, net
Dixon's Lead........⅌ gross $4.50, net
Dixon's Lumber........⅌ gross $6.75, net
Dixon's Carpenters'........dis 40&10 %

Picks.
Railroad, 5 to 6, $11.00; 6 to 7, $12.00........dis 50 %
Adze Eye, 5 to 6, $12.00; 6 to 7, $13.00........dis 50 %

Picture Nails.
Brass Head, Sargent's list........dis 50&10 %
Brass Head, T. & S. Mfg. Co........dis 50 %
Porcelain Head, Sargent's list........dis 50&10 %
Porcelain Head, Judd's list........dis 40@40&10 %
Porcelain Head, T. & S. Mfg. Co........dis 40 %
Niles' Patent........dis 33⅓ %

Pinking Irons........⅌ doz 75c, net

Plaiting Machines.
Magic........⅌ doz $10.00, net
Astor Plaiting Machine........each $15.00, dis 20 %
Crown Plaiting Machines........dis 25 %
6 in., $6.00; 10 in., $8.00 each.

Planes and Plane Irons.
Bench, First Quality........dis 20 %
Bench, Second Quality........dis 25 %
Molding........dis 15 %
Bailey's (Stanley R. & L.Co.) new list, Jan.'79.dis 20&10 %
The Stanley (S. R. & L. Co.) new list, Jan.'79..dis 20&10 %
Bailey's "Victor"........dis 20&10 %
Defiance Adjustable........dis 20&10 %
Laflin Mfg Co........dis 35 %
Plane Irons, Butcher's........$5.00 @ $5.25 to £
Plane Irons, Buck Bros........$5.00 to £
Plane Irons, Auburn Tool Co........dis 20 & 10 %
Plane Irons, The Globe Mfg. Co., "Baldwin Iron"........dis 20 & 10 %
Plane Iron, Ohio Tool Co........dis 20&10 %
Plane Irons, Sandusky Tool Co........dis 20&10 %

Pliers and Nippers.
Button's Patent........dis 33⅓ %
Hall's Pat. Compound Lever Cutting Nippers, No. 2, 5 in., $13.50; No. 4, 7 in., $21.00 ⅌ doz........dis 20&10 %
Humason & Beckley Mfg. Co........dis 50&10 %
Gas Pliers........dis 55 %
Eureka Pliers and Nippers........dis 40 %
Russell's Parallel........dis 25 %
P. S. & W. Cast Steel........dis 33⅓&10 %
P. S. & W. Tinners' Cutting Nippers...add 6 % dis 10 %

Plumbs and Levels.
Disston's........dis 40 %
Stanley R. & L. Co.'s Pat. Adjustable........dis 65&10 %
Stanley R. & L. Co.'s Non-Adjustable........dis 65&10 %
Chapin's Patent Adjustable........dis 65&10&10 %
Chapin's Non-Adjustable........dis 65&10&10 %
Standard Rule Co.'s New Adjustable........dis 65&10 %
Standard Rule Co.'s Non-Adjustable........dis 65&10 %
Johnson's Patent Adjustable........dis 65&10 %
Pocket Levels........dis 65&10 %
Davis' Inclinometers........dis 20 %

Post Hole and Tree Augers.
Samson Post Hole Digger........⅌ doz $37.50, dis 20 %
Fletcher Post Hole Augers........⅌ doz $30.00, dis 20 %
Vaughan's Post Hole— 6 in., $23.50; 7, 8 and 9 in., $25.00 ⅌ doz....dis 20&10 %
Eureka Diggers ⅌ doz $27.00........net
Leed's each $2.50........net

Pruning Hooks and Shears.
Disston's Combined Pruning Hook and Saw, ⅌ doz $19.00, dis 20 %
Disston's Pruning Hook........⅌ doz $12.50, dis 20 %
E. S. Lee & Co.'s Pruner........dis 33⅓ %
Pruning Shears........⅌ doz $5.50 @ 6.00
Wheeler, M. & Co.'s Combination........⅌ doz $12, dis 20 %
Dunlap's Saw and Chisel........⅌ doz $9.00, dis 10 %

Pulleys.
Hot House and Tackle........dis 65&10 %
Jap'd Screw........dis 65&10 %
Brass Screw........dis 70&10 %
Jap'd Side........dis 65&10 %
Jap'd Clothes Line........dis 60&10 %
Hay Fork, Solid Eye....$4.50; Swivel, $5.00, dis 50&10 %
Hay Fork, "Anti Friction"........$6.75, dis 10&10 %
Hay Fork, "F" Common and Pat. Bushed....dis 20 %
Hay Fork, Tarbox Pat. Iron........dis 20 %
Shade Rack........dis 45 %

Punches.
Belt or Drive........⅌ doz $2.00; 2.25 4.50, dis 50 %
Bemis & Call Co.'s Cast Steel Drive........dis 50&5 %
Bemis & Call Co.'s Springfield Socket........dis 50&5 %

Spring.....₩ do $7.00, dis 50&7½ %
Spring, Leach's Patent.....dis 15 %
Bemis & Call Co.'s Spring and Check.....dis 40 %
Solid Tinners'.....₩ doz $1.44, dis 40 %

Rail.
R. Sliding Door, Wrought Brass. ₩ ℔ 43c, dis 33⅓ %
Sliding Door, Bronzed Wrt. Iron...₩ foot 12c. dis 35 %
Sliding Door Iron, Painted.....₩ foot 4c, dis 10&10 %
Barn Door....Inch..... ½ ⅝ ¾
Per 100 feet $2.60 3.60 4.60—dis 10 %

B. D. for N. E. Hangers—
Small. Med. Large.
Per 100 feet.....$2.10 2.70 .30—net
Terry's Wrought Iron, 50c ₩ foot..... .net

Razors.
J. R. Torrey Razor Co.....dis 15 %

Razor Strops.
Genuine Emerson.....dis 40 %
Badger's (not Emerson).....dis 33⅓ %
Imitation Emerson.....₩ doz $2.00, dis 20 %
Hunt's.....dis 40&5 %
Chapman.....dis 15 & 2 %
Saunder's.....dis 10 %
Torrey's.....dis 20

Rivets.
Iron and Tinned, new list, Dec. 10, 1881.....dis 40 %
In bulk, new list, Dec. 10, 1881.....dis 40 %
Copper Rivets and Burrs.....dis 60 %
Nos.. 7 8 9 10 11 12 13 14 15
₩ ℔.. 49c 52c 52c 54c 56c 58c 60c 65c 70c

Rivet Sets......dis 33⅓&10 %

Rods.
Stair, Brass.....dis 25 %
Stair Black Walnut.....60c. ₩ doz. dis 10 %

Rollers.
Barn Door, Sargent's list..... dis 5c&10&10 %
Acme (Anti-Friction).....dis 50 %

Rope.
Mnfs' List, September 24, 1883..... dis 10 ₩ ℔
Manila.....½ inch and larger ₩ ℔ 16 c
Manila.....⅝ inch ₩ ℔ 16½c
Manila.....¼ and 5-16 inch ₩ ℔ 17 c
Manila, Tar'd Rope.....₩ ℔ 15½c
Manila, Tar'd Lath Yarn.....₩ ℔ 15½c
Manila, Hay Rope.....₩ ℔ 16 c
Sisal.....½ inch and larger ₩ ℔ 10½c
Sisal.....⅝ inch ₩ ℔ 11 c
Sisal.....¼ and 5-16 inch ₩ ℔ 11½c
Sisal. Hay Rope.....₩ ℔ 10 c

Rules.

	Boxwood.	Ivory.
Chapin's	dis 70&10 %	dis 40@55 %
Standard		
Stanley		
Stephens	dis 70&10 %	dis 55%

Sad Irons.
From 4 to 10.....₩ ℔ 3½c net
Self-Heating.....₩ doz$9.00 net
Self Heating, Tailors'.....₩ doz $18.00 net
Gleason's Shield and Toilet.....dis 25 %
Mrs. Pott's Irons, Doubled Pointed.....dis 35 %
Mrs. Pott's Irons, Square Back.....dis 35 %
Enterprise Star Irons, new list, July 20, 1882...dis 35 %
Combined Fluter and Sad Iron....₩ doz $15.00, dis 15 %
Chinese Laundry (N. E. Butt Co.).....dis 15%
New England.....5c dis 15 %

Sand Paper.
Baeder & Adamson's Flint, 00 to 1½ $4.50 ₩ ream
Baeder & Adamson's Flint, 2, 2½ & 3. 5.00 ₩ ream
Baeder & Adamson's Flint, Assorted. 4.75 ₩ ream
Baeder & Adamson's Star..... 3.75 ₩ ream
Baeder & Adamson's Emery..₩ ream $6.50 @ 11.50
Bartles Flint.....$4.75&$5.25 ₩ ream dis 35 %
Bartles Harrison, $4.75 ₩ ream.....dis 35 %
New England, same list as B. & A. Flint.....dis 35 %
Gage's.....dis 30&5 %

Sash Cord.
Common.....₩ ℔ 13c net
Patent.....₩ ℔ 15c net
Silver Lake, Hemp.....₩ ℔ 50c, dis 10&5 %
Silver Lake, White Cotton.....₩ ℔ 50c, dis 10&5 %
Silver Lake, Drab Cotton.....₩ ℔ 55c, dis 10&5 %
Raw Hide, ₩ foot, ¾ in., 5c.; 5-16 in., 7c.; ⅜ in., 10c. dis 15 %
.....dis 15 %
Steel Ribbon.....dis 10 %

Sash Locks.
Clark's, No 1, $10.00; No. 2, $8.00 per gross.....dis 33⅓ %
Ferguson's.....dis 33⅓ %
Walker's.....net
Hammond's Window Springs.....dis 25 %
Northup Window Springs. No. 1, $10.00 ₩ gross..dis 15 %
"Common Sense," Japanned, Coppered and Bronzed. ₩ gross $5.00 net
Common Sense," Nickel Plated..₩ gross $10 00 net
Universal".....dis 40 %

Sash Weights.
Solid Eyes, in 500 ℔ lots and over.....₩ ℔ 2½cnet

Sausage Stuffers or Fillers.
Miles "Challenge".....₩ doz $20, dis 40 %
Perry.....₩ doz. No. 1½; No. 0, $21, dis 25&10 %
Draw Cut No. 4.....each $30.00, dis. 20 %
Enterprise Mfg. Co.....dis 25 %
Silver's.....dis 25 %

Saws.
Disston's Circular, Mill and Cross Cut.....dis 40 %
Disston's Hand, Panel, Rip, &c.....dis 20 %
Boynton's Lightning Cross Cuts, new list.....dis 40 %
Boynton's Circular and Mill.....dis 40 %
Boynton's Ice.....dis 25 %
Boynton's Lightning Hand, Panel and Rip.....dis 25 %
Wheeler & Clemson Mfg. Co.'s Hand.....dis 30 %
W. M. & C. Mfg. Co. Cross Cuts.....dis 30 %
Livingston's Butcher and Kitchen.....dis 20 %
Livingston's Framed Wood—
Nos..... 101 102 103 104 105
Per doz.....$10.00 8.40 10.00 7.50 6.20 net
Peace Circular and Mill.....dis 40 %
Peace Hand, Panel and Rip.....dis 25 %
Peace Cross Cuts.....dis 35 %
Peace Band Saws, all widths.....dis 10 %
Richardson's Circular.....dis 40 %
Richardson's Mill and X Cut.....dis 40 %
Richardson's Hand Panel, Butcher and Web Saws.....dis 25 %

Saw Frames.
White, Vermont.....₩ doz $1.50, dis 25&10%
Red, Polished and Varnished.....₩ doz $1.50, dis 10%
Saw Rods.....$10 list, dis10 & 10%

Saw Sets.
Boynton's Patent X Cut, per doz, $12.00; Hand Saw per doz, $10.00.....dis 25 %
Stillman's Genuine.....₩ doz $3.50 and $4.50 dis 10 %
Stillman's Imitation.....₩ doz $2.25, dis 30&10 %
Common Lever.....₩ doz $2.00, dis 30&10 %
Leach's.....No 0. $8.00; No. 1, $15.00, dis 15 %
Nash's.....dis 20&10 %
Hammer, Hotchkiss.....$5.50, dis 10 %
Hammer, Bemis & Call Co.'s new Patent.....dis 30&5 %
Bemis & Call Co.'s Lever & Spring Hammer..dis 30&5 %
Bemis & Call Co.'s Plate.....dis 10 %
Bemis & Call Co.'s Cross Cut.....dis 12½ %
Aiken's Genuine.....$13.00, dis 50&10 %
Aiken's Imitation.....$8.00, dis 55 %
Hart's Patent Lever.....dis 20 %
Diston's.....dis 20 %
Morrill's.....No. 1, $15 No. 4, $12, dis 40&5 %

Scales.
Hatch, Counter, No. 171.....₩ doz $42, dis 45 %
Hatch, Tea, No 161.....₩ doz $15.00, dis 45 %
Union Platform.....$6.00, dis 45 %
Fairbanks'.....dis 25 %
Riehlé Bros.....dis 20 & 10 %
Buffalo Scale Co.....dis 20&10 %
Forsyth Scale Co.....dis 20&10 %
Howe's.....dis 20&10 %
Chatillon's Grocers'.....dis 40 %
Chatillon's Eureka.....dis 25 %
Family Universal, 12 ℔, $30; 24 ℔. $36.....net
Family Favorite.....dis 30 %
Family, Turnbull's.....dis 30 %
Scale Beams, List of January 12, 1882.....dis 40&10 %

Scrapers.
Adjustable Box Scraper (S. R. & L. Co.), $6.50, dis 20&10 %
Box 1 Handle.....₩ doz $4.00, dis 10 %
Box Handle.....₩ doz $6.00, dis 10 %
Defiance Box and Ship.....dis 20&10 %
Foot.....dis 50&10 %
Ship, common.....₩ doz $3.50 net
Ship, Providence Tool Co.....dis 10 %

Screen Corners.
Porter's Pat Windowand Door Frame..... dis 33⅓

Screw Drivers.
Douglas Mfg. Co.....dis 20&10&10 %
Diston's.....dis 40 %
Diston's Patent Excelsior.....dis 40 %
Buck Bros.....dis 25 %
Stanley Rule & Level Co.'s, Varnished Hdls..dis 60&10 %
Stanley Rule & Level Co.'s, Black Handles..dis 50&10 %
Sargent & Co.'s.....dis 50&10 %
Gay's Double Action Ratchet
₩ doz, 4 in., $5.00; 5 in., $10.20; 6 in., $12.00—dis 35 %
Mallett & Co.'s Double Action Clutch
₩ doz, 4 in., $7.00; 5 in., $8.00; 6 in., $9.00—dis 15 %
Champion.....dis 25 %
Clark's Patent.....dis 20&10 %

Screws.
Flat H'd Iron, new list, Dec. 27, 1882.....dis 55 %
Round Head Iron, new list, Dec. 27, 1882.....dis 55 %
Flat Head Brass, new list Dec. 27, 1882.....dis 55 %
Round Head Brass, new list, Dec. 27, 1882.....dis 45 %
Brass and Silver Capped.....dis 40 %
Japanned, list of Plain Screws.....dis 50&10 %
Coach, Patent Gimlet Point.....dis 70 %
Bed.....dis 50&20 %
Machine, Flat Head, Iron.....dis 55 %
Machine, Round Head, Iron.....dis 50 %
Bench, Iron.....dis 55&10 %
Bench, Wood, Beech.....₩ doz $3.00, dis 10 %
Bench, Wood, Hickory.....dis 20&10 %
Hand, Wood.....dis 25&10 %
Hand Rail, Sargent's.....dis 60&5&10 %
Hand Rail, Humason, Beckley & Co.'s....dis 60&5&10 %
Hand Rail, Am. Screw Co., list of Jan. 1, '81.....dis 70 %
Jack (Wilson's).....dis 40 %

Screw Window Balances.
R. B. Hugunin's, No. 1, $2.10; No. 2, $1.75; No. 3 $1.60.....₩ doz net

Scroll Saws.
Lester, $10.00.....dis 25 %
Rogers, $5.00.....dis 25 %

Shears and Scissors.
American (Cast) Iron.....dis 70@70&10 %
Pruning.....see Pruning Hooks and Shears.
Barnard's Lamp Trimmers.....₩ doz $3.75
Tinners'.....add 6 %, dis 10 %
Seymour's, List, Dec., 1881.....dis 60 %
Heinsch's, List, Dec., 1881.....dis 60 %
Heinsch's Tailor's Shears.....dis 33⅓ %
Wiss, Cutlery Co. St. Trimmers.....dis 75 %
Cast Steel Trimmers.....dis 80 %
Wiss, J., & Sons' list, Dec., 1881.....dis 60 %
Wiss, J., & Sons' Tailors' Shears.....dis 50 %

Sheaves.
Sliding Door, M. W. & Co., list.....dis 5&10&2 %
Sliding Door, R. & E. list.....dis 60&10&2 %
Sliding Door Patent Roller.....dis 60&10&2 %
Sliding Door, Patent Roller, Hatfield's....dis 60&10&2 %
Sliding Door, Russell's Anti-Friction.....dis 60&10&2 %
Sliding Door, Moore's Anti-Friction.....dis 60 %
Sliding Shutter R. & E. list.....dis 50&10&2 %
Sliding Shutter, Sargent's list.....dis 60&10 %
Sliding Shutter, Reading list.....dis 60&10 %
Adams's Anti-Friction (Hanging).....dis 60 %

Shovels and Spades.
Ames, New list, July 1, 1881.....dis 15 %
Griffiths.....dis 50&5 %
Old Colony.....dis 15 %
Payne Pettebone & Son, new list.....dis 40&10 %
Payne Pettebone & Son, R. R. Shovels.....dis 15 %
Remington's (Lowman's Patent).....dis 30 %
Rowland's.....dis 50&5 %

Shovels and Tongs.
Iron and Brass Head, R. & E. list.....dis 60&10&2 %
Iron and Brass Head, P. S. & W.....dis 60&10&10 %
Polished Steel, new list.....dis 40&10&2 %

Slates.
Square Frames, by case.....dis 70 %
Less than a case.....dis 60&10 %

Spoke Shaves.
Defiance Metallic.....dis 20&10 %
Iron.....dis 45 %
Wood.....dis 30 %
Bailey's (Stanley R. & L. Co.), new list.....dis 30&10 %
Stearns'.....dis 30&10 %

Spoke Trimmers.
Bonney's.....₩ doz $10.00, dis 40&5 %
Stearns'.....₩ doz $9.00, dis 20&10 %
Ives'.....No. 1, $15.00; No. 2, $12.00 ₩ doz, dis 15&10 %
Douglass'.....₩ doz $9.00, dis 15 %

Spoons.
Basting.....dis 60&10 %
Solid Table and Tea.....dis 60 %
Britannia.....dis 50&10 %
Reed & Barton.....dis 40&10&5 %
Holmes, Booth & Haydens.....dis 40&10&5 %
German Silver.....dis 30&10&5 %
Cast Steel, Silver Plated.....dis 33⅓ %
Tin (P. S. & W.), Teas.....$1.25 ₩ gross, net
Tin (P. S. & W.), Tables.....$2.00 ₩ gross, net
Tin (Cowles Hdw. Co.).....dis 10 %
Tin (Cowles Hdw Co.), case lots.....dis 20 %

Squares.
Steel and Iron.....dis 50&10&2 %
Nickel Plated.....dis 50&10& 2 %
Try Square and T Bevels.....dis 50&10 %
Disston's Try Square and T Bevels.....dis 40 %
Winterbottom's Try and Mitre.....dis 20&10 %

Stocks and Dies.
"Lightning" Screw Plate.....dis 10 %

Stone.
Hindostan No. 1, 60; Axe, 80.....dis 40 %
Sand Stone.....₩ ℔ 50, dis 33⅓&10 %
Washita Stone.....No. 1, ₩ ℔ 18c net
Washita Stone.....No. 2, ₩ ℔ 16c net
Washita Stone, Slips.....No. 1, ₩ ℔ 37c net
Arkansas Stone No. 1. 4 to 6 in.....₩ ℔ $1.35 dis 10 %
Arkansas Stone No. 1. 6 to 9 in.....₩ ℔ $2.00 dis 10 %
Turkey Oil Stone (Chase).....4 to 8 in., ₩ ℔, 60c, dis 10 %
Turkey Slips (Chase).....$1.75 ₩ ℔ dis 10 %
Lake Superior (Chase).....₩ ℔ 16c, dis 10 %
Lake Superior, Slips (Chase).....₩ ℔ 30c, dis 10 %
Grindstones, Family, Loring's.....dis 10 %

Stove Polish.
Joseph Dixon's.....₩ gross $6.00, dis 10 %
Gem.....₩ gross $4.50, dis 10 %
Gold Medal.....₩ gross $6.00, dis 25 %
"Mirror".....₩ gross $6.00, dis 5 %
Lustro.....₩ gross $4.75, net
Ruby.....₩ gross $3.75, net
Rising Sun.....₩ gross $6.75, net
Dixon's Plumbago.....₩ ℔ 8c. net
Loynton's Noon Day ₩ gross No. 1, large, $4.50 No 2, small, $3 ;No. 3, medium, $4.

Tacks, Brads, &c.
New List, Sept. 1, 1882.

Tinned Swedes Tacks	dis 30 %
Tinned American Tacks	dis 30 %
Swedes Tacks, all kinds	dis 30 %
American Cut Tacks	dis 30 %
Copper Tacks and Nails	dis 30 %
Swedes Hungarian Nails	dis 35 %
Gimp and Lace Tacks	dis 30 %
Gimp and Lace Tacks, Tinned	dis 30 %
Finishing Nails	dis 25 %
Trunk and Clout Nails	dis 25 %
Common and Patent Brads	dis 20 %
Basket Nails	dis 20 %
Brush Tacks	dis 20 %
Leathered Carpet Tacks	dis 20 %
Cigar Box Nails	dis 20 %
Chair Nails	dis 20 %
Double-pointed Tacks	dis 40& 5%

Extra 10 % off all.

Tap Borers.
Common and Ring.....dis 20 %
Ives' Tap Borers.....dis 15&10 %
Enterprise Mfg. Co.....dis 20&10 %

Tapes, Measuring.
American.....dis 25 %
Spring.....dis 25&10 %
Chesterman's.....regular list dis 15 @ 20 %

Thermometers.
Tin Case.....dis 80 %

Tobacco Cutters.
Enterprise Mfg. Co. (Champion).....dis 20&10 %
Wood Bottom.....₩ doz $10.00, dis 25&10 %
All Iron.....₩ doz $8.25, dis 35 %
Nashua Lock Co.'s.....₩ doz $18.00 dis 50&5 %
Wilson's.....dis 50 %
Clipper (Sargent & Co.).....₩ doz $18.00. dis 20 & 10 %

Toe Calks.
Winsted.....₩ ℔ 9c, dis 5

Tinners' Tools and Machines.
Machines (P. S. & W.).....list add 20 %
Tools (P. S. & W.).....add 6 %
} dis 10 %

Transom Lifters.
Wollensak's Patent.....dis 35 %
Reiher's Patent, new list, Feb., 1882.....dis 20&10&10 %
Excelsior.....dis 50&10&2 %

Traps.
Game, Newhouse.....dis 35 %
Game, Oneida Pattern.....dis 60 %
Game, Blake's Patent.....dis 40&5 %
Mouse, Wood, Choker.....₩ doz holes, 14c
Mouse, Round Wire.....₩ doz $1.50, dis 10 %
Mouse Cage, Wire.....₩ doz $2.50, dis 10 %
Mouse, Catch-em-alive.....₩ doz $2.50, dis 15 %
Mouse, "Bonanza".....per gross $10.00 net
Rat, "Decoy".....₩ doz $10.00, dis 10 %

Trowels.
Lothrops' Brick and Plastering.....dis 25 %
Reed's Brick and Plastering.....dis 15 %
Diston's Brick and Plastering.....dis 20 %
Peace's Plastering.....dis 25 %
Clement & Maynard's.....dis 20 %
Rose's Brick.....dis 15 %
Brades' Brick.....dis 25 %
Worrall's Brick and Plastering.....dis 20 %
Garden.....dis 55 %

Triers.
Butter and Cheese.....dis 25 %

Trucks (Warehouse, &c.
Penfield Block Co.'s list, 1882.....dis 40 %

Vises.
Solid Box.....dis 35 %
Solid, Peter Wright's.....15@c
Solid, Wilkinson's.....14@15c
Parallel, Parker's.....dis 30 %
Parallel, Wilson's.....dis 50 %
Parallel, Howard's.....dis 20&10 %
Parallel, Merrill's.....dis 15 @ 20 %
Parallel, Sargent's.....dis 60&10 %
Parallel, Backus and Union.....dis 40 %
Parallel, Double Screw Leg.....dis 15&10 %
Parallel, Prentiss.....dis 25 %
Parallel, Simpson's Adjustable.....dis 25&5 %
"Family," List.....net
Saw Filers, Bonney's.....₩ doz $24.00, dis 20&10 %
Saw Filers, Stearn's.....dis 20&10 %
Saw Filers, Hopkins'.....₩ doz $17.50, dis 10 %
Saw Filers, Reading.....dis 40&10 %
Cowell Hand Vises.....dis 20 %
Richardson's Vise and Anvil.....dis 25 %

Washer Cutters.
Smith's Patent.....₩ doz $12.00, dis 25 %
Johnson's.....₩ doz $11.00, dis 33⅓ %
Penny's.....₩ doz Pol. $17.40; Jap'd, $16.50, dis %
Appleton's.....₩ doz $16.00, dis 60&10 %

Washers.—See Nuts and Washers.

Well Wheels......dis 60&10 %

Windows Balances.
Hugunin Improved Pat. Screw, new list.....dis 40 %

Wire.

Brass and Copper	dis 33⅓ %
Market, Bright an l Annealed	dis 55 @ 57½ %
Market, Coppered	dis 50 @ 52½ %
Market, Galvanized	dis 45 @ 47½ %
Market, Tinned, Tinned list	dis 47½ @ 50 %
Stone, Bright and Annealed Nos. 6 to 18	dis 57½ @ 60 %
Stone, Bright and Annealed Nos. 19 to 26	dis 60 @ 65 %
Stone, Bright and Annealed Nos. 27 to 36	dis 62½ @ 70 %
Stone, Galvanized Nos. 19 to 30	dis 45 @ 50 %
Stone, Tinned, Tinned list	dis 45 @ 47½ %
Tinned Broom Wire	dis 57½ @ 60 %
Cast Steel Wire	dis 47½ @ 50 %
Annealed Fence, Nos. 8 & 9	dis 57½ @ 60
Annealed Grape, Nos. 10 to 14	dis 57½ @ 60 %
Fence Staples	₩ ℔ 5¼ @ 5½c
Fence Staples, Galvanized	₩ ℔ 6¼ @ 6½c
Stubs Steel Wire	$5.00 to £ dis 30 %
Japanned Barb Fence	₩ ℔ 6½c @ —
Galvanized Barb Fence	₩ ℔ 7½c @ —
Steel Music Wire, Nos. 7 to 30	$1.00 ₩ ℔
Picture Wire, T. S. & J	dis 40 %
Clothes Line Wire, Galvanized	₩ coil 25 @ 40c net
Wire Cloth, green, drab and black,	₩ sq. ft., 20. @ 24c.....net

Wrenches.

American Adjustable	dis 45 %
Baxter's Adjustable "B"	dis 20&5 %
Baxter's Diagonal	dis 30&5 %
Coes' Genuine	dis 50&5 %
Coes "Mechanics"	dis 50&10&3 %
Coes' Pattern, Malleable	dis 75 %
Coes' Pattern Wrought	dis 70 %
Girard Standard	dis 60 %
Girard Adj.	dis 70 %
Bemis & Call's Patent Combination	dis. 20 %
Bemis & Call's Merrick 's Pattern	dis 35 %
Bemis & Call's Brigg's Pattern	dis 25 %
Bemis & Call's Cylinder or Gas Pipe	dis 40 %
Aiken Pocket (Bright)	$5.00, dis 50&10 %
The Favorite Pocket (Bright)	₩ doz $4, dis 40 %
Webster's Patent Combination	dis 25 %
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Wringers.

	Per doz.	
Universal, XX, No. 2½	42.00	Lots of 1 doz., dis 33⅓ %
Universal, XX, No. 2	45.00	
Universal, XX, No. 1½	51.00	
Universal, XX, No. 1	66.00	
Peerless, no Cogs, No. 1	42.00	Lots of 5 doz., dis 40 %
Peerless, with Cogs, No. 2½	45.00	
Peerless, with Cogs, No. 2	48.00	
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Peerless, with Cogs, No. 4	60.00	
Eureka, No. 2	42.00	
Novelty No. 2, for Common Tubs	$42.00	
Novelty No. 3, for Common Tubs	48.00	
Excelsior No. E. for Stationary Tubs	51.00	
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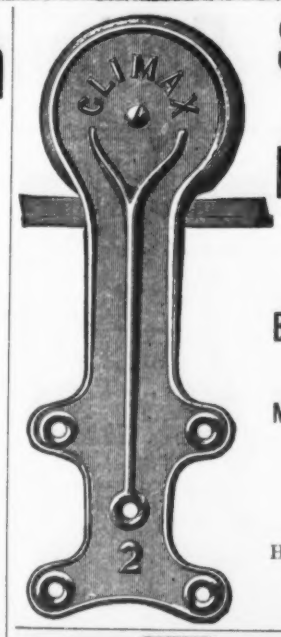

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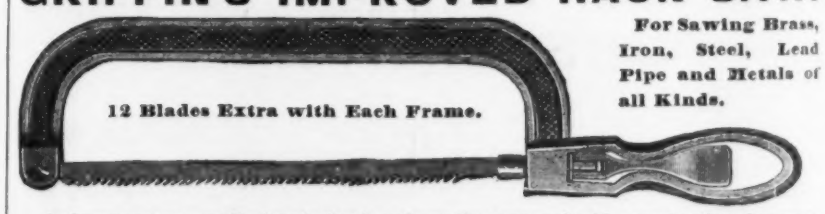

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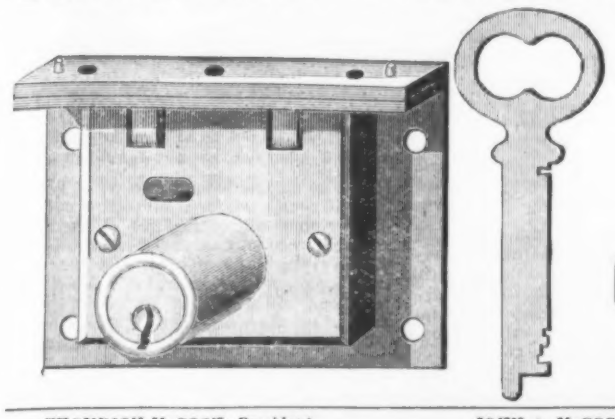

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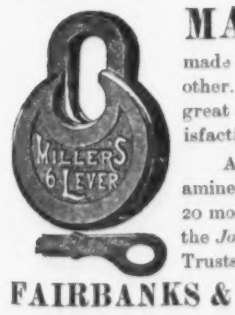

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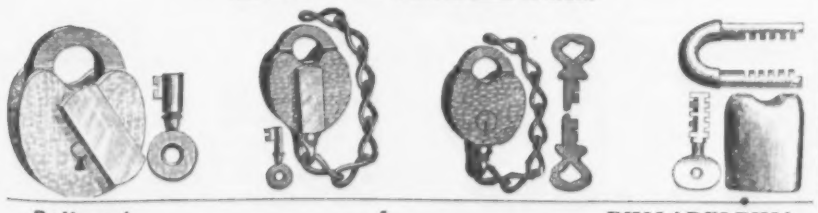

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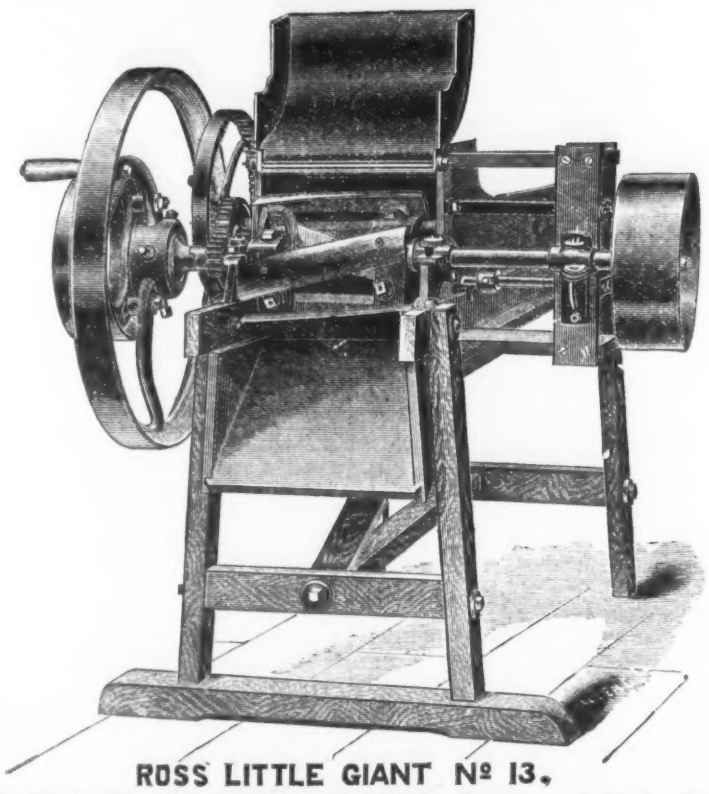

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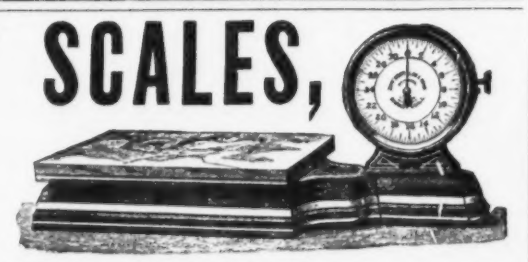

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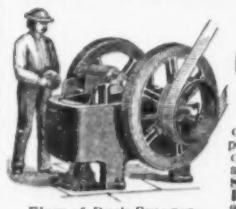

View of Rock Breaker.

designed for breaking to small pieces and one-third dust all kinds of hard and brittle substances, such as **Quartz, Emery, Gold and Silver Ores, Coal, Plaster, Iron, Copper and Lead Ores**; also, **Stone** for making **Concrete and Railroad Ballast.**

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for eight years, and have the Largest and Best Facilities of any Manufactory in the country.

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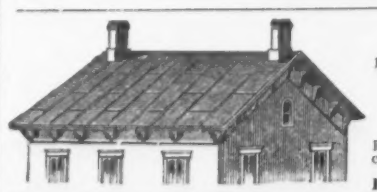

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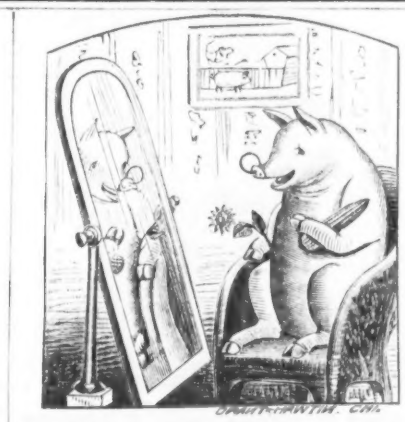

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SWINE JEWELRY

will be wanted all the same. Send in your orders for the best

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The Only Strictly Reliable Torch Made.

The lighting of large manufacturing establishments with a convenient, portable, brilliant, steady **light,** and by cheaper means than coal gas or the unsteady electric light, has been successfully accomplished **by us** by vaporizing **Oil, Naphtha** and **Gasoline** into **Gas or Vapor,** and so made as to throw out **12 large gas jets,** affording a brilliant light. Can furnish with **Stand and Reflector** when desired. In addition to our own valuable patents, we have purchased all the **Billings** Patents, also the Wackerman Electric Torch, giving us the entire control of all that is valuable in **Oil Vapor Burners** in the United States, and hereby give notice that any attempt to infringe upon any of these patents will be prosecuted. For full particulars, address

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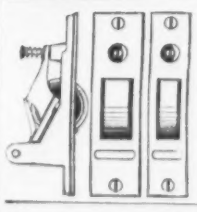

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BRONZE FINISHED,

3 sizes, made with 1882 improvements. Genuine Hugunin Balances have my name cast upon them as "Patentee and Solely Authorized Maker," and dates of patents on the boxes containing same. Beware of immitations, and save trouble from infringement.

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Dynamite, Nitro Glycerine,

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Of Cotton, Linen & Steel,

FOR ALL PURPOSES.

351 to 353 Classon Ave., Brooklyn N. Y.

Tunneling Under Pittsburgh Rolling Mills.

In a full description of the tunnel in Pittsburgh, Pa., for the Pittsburgh, McKeesport and Youghiogheny Railroad, the *Dispatch* of that city says:

Nearly every foot of the ground was occupied with either buildings or huge piles of metal, and, while the former were not disturbed, thousands of tons of metal, ore, sand, fire-bricks and other materials had to be moved before a definite location of the line of the proposed tunnel could be made. After the surveys had been completed, it was decided that the covered way should be 1650 feet in length, 40 feet wide, and have a clear passage-way for two tracks, 18 feet in hight, thus involving a cut of at least 25 feet throughout the entire distance.

After these preliminaries had been arranged, the engineers set about the construction of the difficult work which had been mapped out, and on July 16, 1882, the work of excavation was commenced at both the eastern and western portals. A force of several hundred laborers was employed, and the work on the western portion was pushed forward until nearly 600 feet of the excavation was completed, when work was suspended and the entire force placed on the eastern end, from which side the remainder of the excavation was made, the material taken out being used in ballasting the roadway from the mill as far east as Turtle Creek, a distance of not quite 9 miles, construction trains being placed at once on that section of the new line. The work was pushed through with all possible vigor, and the masonry, brickwork and ironwork followed close up to the excavators. The last carload of material was taken out of the cut June 15 last, thus completing that portion in about 11 months. The masonry work was begun August 12, 1882, and the last arch in the work was completed August 18, the work occupying a few days over one year, although construction trains had been running through the tunnel since June 24 last.

The material pierced was nearly all cinder, and every foot of the excavation had to be shored up to guard against accidents to the army of men who were at work in the cut. At one place, however, a bed of slag was encountered which defied pick or diamond-pointed drill, and even blasting was unavailing. The under bank had been on fire for many years, and the material had become a solid mass as hard as iron itself. This obstruction extended for a distance of over 100 feet. The only way in which it it could be gotten rid of was to break it with heavy weights dropped upon it, and then excavating under the broken mass, bury it in the hole, as it was impossible to load it on the cars. Another source of serious difficulty was the sewers and pumping mains leading from the river to the works. In one instance it was found necessary to lower a sewer some 12 or 15 feet below its original depth. To do this a tunnel running directly under the old sewer, from the river to the works, was made, a new sewer put in, and then the old one was removed. This involved serious darger, but it was successfully accomplished. The lowering of the water mains was more easily done, but required great skill as well as caution. The most serious difficulty, however, was encountered on the surface, which was covered with a network of standard and narrow gauge railway trains, which, with locomotives attached, were constantly crossing and recrossing overhead. These had to be secured as the work progressed, and there was not an hour of interruption. Then the inclines running from the river had to be supported, so as to avoid delays and accidents. The numerous buildings located along the line of the work were also a source of constant difficulty, and the scrap piles and manufactured iron were always requiring attention. During the whole progress of the work but one of the laborers employed in the excavation was killed, and that was by a neglect to follow directions in putting in supporting timbers.

Needle Making.

Almost all the needles made in England are made at Redditch. The wire is of the best quality of steel, and is supplied in coils varying from 1200 to 3000 yards in length and from $\frac{1}{32}$ inch to $\frac{1}{105}$ inch in thickness. The processes passed through are as follows: The wire is cut, to lengths of two needles, by hand or machine shears; these lengths are annealed in bunches of about 4 inches diameter; while still hot, and held together by rings, the bundles are rolled over by hand-pressure on an iron table, so as to straighten each other; they are then pointed at both ends successively upon quick-running grindstones, being rotated between two india-rubber bands, traveling over a grindstone with concave face; by a blow from a falling die the two heads are haded and gutters marked for the eyes; the eyes are pierced by a pair of punches in a delicate hand-press; the needles are threaded upon a pair of fine wires, and filed to remove the burr made in stamping; they are then broken across through the thin fin left between the heads, and the heads themselves rounded by filing; they are then heated in small iron trays, and dropped separately into an oil bath, to harden them; after which they are tempered on a hot plate, or in a stove, and straightened by a hand-hammer on a small anvil, to remove any warping due to hardening.

The needle has now assumed its final condition, but it is not yet finished. The next operation is scouring, for which a number of needles, mixed up with soft soap, emery and oil, are wrapped up with canvas into a roll about 2 feet long and 3 inches diameter, and then rolled backward and forward under runners worked by a crank from the engine. The process goes on for eight hours, during which the needles are continually rubbing against each other, and it is repeated from two to eight times, the final scouring being with putty powder. In some cases the straightening and scouring are performed at the same time by machinery. When perfectly scoured the needles are shaken up in a tray until they all lie parallel, and then, by a dexterous motion of the hand, they are shifted so that all the points are in the same direction. Next, defective needles are picked out of the lot by hand; the eyes are "blued" or softened by traversing them over a gas-flame, and in some cases the eye is smoothed on each face by a fine countersunk drill. The needles are then strung on horizontal wires, carried on a reciprocating frame; the wires have serrated surfaces, which smooth the inside of the eyes as the needles swing to and fro; this process is called burnishing. Lastly, the heads and points are finished off by grinding first on a 9-inch running grindstone, and then on an emery-roller, the workman holding a number of needles in his hand together, and rolling them between his finger and thumb. It now only remains to stick the needles side by side in sheets of paper and pack them for sale.

INDUSTRIAL ITEMS.

MAINE.

The village of Oakland, until recently a part of Waterville, turns out a larger number of scythes yearly than any other place in the world. Three of the largest establishments there have a total annual capacity of 35,000 dozen scythes, the largest turning out 20,000 dozen.

The Pembroke Iron Works, Pembroke, which passed into the hands of J. C. Warr & Bros., of Wareham, Mass., early in the summer, have been in operation since 1828, and at present a better quality of iron is being manufactured than ever before. Until within a few weeks the works have been run night and day, but the severe drought of this section has affected the water-power so that night work has been practically suspended. About 150 hands are at present employed, and 30 tons of pig iron daily manufactured into hoop and band iron and nails. The band iron is largely calculated for the manufacture of iron hinges, and is made in widths varying from 1⅛ to 6½ inches. Forty machines are constantly employed in the manufacture of nails of all sizes, and it is contemplated putting in 24 more at an early day. The works contain eight smelting and four heating furnaces, and require about 1000 horse-power for the operation of the machinery. The monthly pay roll is $5000. —*Boston Commercial Bulletin.*

VERMONT.

Strong & Parker, of Vergennes, are busy on orders for their "Little Giant" road machine.

MASSACHUSETTS.

The bronze department of the Ames Company, of Chicopee, is full of orders. Among the work at present under way are three *bas-relief* scenes for the Chisholm monument at Cleveland, Ohio. The company's machine shops are also busy.

The new Home Sewing Machine Company, of Orange, have nearly finished the foundation for the fourth boiler-house and chimney on their works, on the south side of the river. Their seven or more boilers will furnish heat and motive power for their immense works in process of building.

The Pond Machine Company, of Worcester, numbered among their recent shipments a large engine lathe, destined for Pittsburgh, Pa. The lathe weighs 35 tons, the bed-plate being 50 feet long, in one piece.

Lovejoy & Son, of Lowell, manufacturers of cutlery, are having a large engine of the Harris Corliss type set up in their factory.

The work of rebuilding has commenced at the burned Lamb Wire Mill, at Northampton. The new mill will be 84 x 39 feet.

B. & J. W. Belcher, of Chicopee Falls, turn out 700 of their Mudgell hay tedders per annum, having worked up to this figure from 50, the number manufactured the first year.

The Ames Manufacturing Company, of Chicopee, are doing a large business in sewing machines and tricycles.

The Douglas Ax Works are making additions to their plant.

Belcher & Taylor are making two additions to their Chicopee works, one 100 x 15 and one 70 x 30.

CONNECTICUT.

The Francis Mfg. Company, New Britain, are making all kinds of cast-steel goods, including edged tools, axes and hatchets, and a variety of small wares, such as tuning-forks, &c. The castings are made by a new process, which is said to be different from any hitherto employed in casting steel.

NEW YORK.

The Franklin Iron Manufacturing Company have blown in their new furnace near Syracuse. The stack measures 75 x 14.

PENNSYLVANIA.

One hundred new ovens have been laid out at the Clarissa Coke Works of James Cochran & Son, at Dawson, on the Dickerson Run branch of the Pittsburgh, McKeesport and Youghiogheny Railroad. The plant now consists of 100 ovens, which are in active operation. A new store-room, 40 x 60 feet, is being erected.

The Kemble Coal and Iron Company are the defendants in a suit that is being contested in the courts at Bedford with great vigor on both sides. In 1872 Thomas A. Scott and R. H. Gratz, of Philadelphia, J. H. Seymour, of New York, and S. L. Russell, of Bedford, leased a valuable tract of ore land to the Kemble Coal and Iron Company for 11 years, with a royalty of 50 cents per ton. There was a clause in the lease reading as follows: "For the first year of the lease the parties of the second part are to pay rent on as many tons as they are able to mine, but for any period of three years thereafter the rent in the aggregate is not to be less than $10,000, whether ore to that extent is mined or not, unless the irregularity of the ore vein should, to the satisfaction of the said parties of the first part, prove so great as to prevent the said parties of the second part from taking out ore to that amount." The company commenced operations for taking out the ore, but quit in a year's time, alleging that the ore was not present in paying quantities, that the title was in dispute, and that a branch road had not been constructed to the property as per agreement. The owners sued when the first payment of $10,000 was due and won in the lower and Supreme Court. The case now on trial is for the collection of two payments of $10,000 each, which are due under the lease.

The Blandon Rolling Mill has started up after a period of three weeks' idleness. During the suspension several important improvements were made, among them the introduction of a new engine.

The new building of the Shenango Machine Company, at Sharon, which is to take the place of the one recently burned, is beginning to take shape. A substantial foundation has been laid, and the laying of the brick walls has begun. The new shop will be a substantial one-story brick building, 100 feet long by 40 feet wide, and an L nearly half as large for boiler-room, blacksmith shop, &c. The whole will be roofed with slate, and is to be completed by the 1st of October. A large amount of new and the latest improved machinery, enabling the company to perform a much greater amount of work, and to turn out machinery that was impossible in the old shop, will be placed in it. A fine 60-horse-power boiler is now being built for them by the Sharon Boiler Works.

The residents of Chartiers, near Pittsburgh, are agitated over a rumor that another rolling mill is to be located there.

A building 24 x 37 has been staked off for the Bethlehem Electric Light Company. It will be of brick, and will contain all the necessary machinery. The stock has all been subscribed for, and 25 lights have been engaged.

The Monocacy Furnace, in Union Township, has been put in blast, and is working satisfactorily, the first cast of iron having been made on last Thursday morning, the iron being of excellent quality.

A fire at the Mellert Iron Works, Reading, on September 17, did some $3500 worth of damage, the loss, however, being entirely covered by insurance.

The stockholders of the Co-operative Iron and Steel Works, of Danville, Pa., will meet on October 6, to consider a change in the nature of the corporation. It is proposed to accept the provisions of the new constitution and the incorporation act of April 29, 1874, changing the name of the company to the Danville Steel Company. The feeling among the stockholders is reported to be strongly in favor of the change.

Furnace No. 1, at Hollidaysburg, has blown out for repairs to the stack. It is reported that the company contemplate removing the old stone stack and replacing it with a new iron one.

Eckert's Furnace, No. 1, at Reading, has chilled, and during the past few days and nights a force of men has been vainly trying to break up the solid mass within. Chipping and prying have been almost useless, so hard has it become, and several blacksmiths are kept busy sharpening tools. The furnace is 57 feet high, and now contains 38 feet of chilled material. It will require several months before it is again in running order. The remaining furnace has been idle also, but is now blown in.

Lloyd & Lindsay, 328 Walnut street, Philadelphia, have been awarded the contract for the steel for the entire construction of the steel ship to be built by the Harlan & Hollingsworth Company, of Wilmington, Del. This includes the hull plating, angle iron for frames, bulb deck beam, &c. The steel plates will all be made by the Siemens-Martin process, at the Co-operative Iron and Steel Works, Danville, Pa. Sample deck-beams, angles and plates were rolled and submitted, together with the tests, which completely met the views of the builders and the fullest requirements of the specifications under which the vessel is to be built. This is said to be the first steamer built in the United States the construction of which is steel throughout, including boilers.

PITTSBURGH AND VICINITY.

The new shaft which the Black Diamond Steel Works are making for the steamer C. L. Wood will weigh 20,000 pounds when finished. Pittsburghers hereafter will have no need to send to Krupp, at Essen, for their steamboat shaftings, as the Black Diamond Works, with the largest hammer in America, are prepared to do the work.

KcKee's new glass house, on Twelfth street, Southside, is rapidly approaching completion and will be ready for occupancy about the middle of October. It is probable, however, that the establishment will have to remain idle, as the prospects of an amicable settlement of the trouble with the window-glass workers is not very encouraging.

The French Spiral Spring Company are building a large mill between Twenty-fifth and Twenty-sixth streets, below Penn avenue. At present they are engaged drilling a gas well, with the prospect of lighting the mill with natural gas. This will be one of the largest spiral-spring works in this country, and will be fitted with the most improved machinery for carrying on the work successfully.

The production of the Pittsburgh Bessemer Steel Works, at Homestead, last week, was 2500 tons of ingots and 21,000 tons of rails. When the works were built the output was to be 60,000 tons per year, but more than that is produced each month.

Thomas Wightman & Co., of this city, have secured the control of the prescription-glass works at Parker City, and will operate them in the future.

Another new steel shaft has just been completed at the Black Diamond Steel Works. It is 31 feet long, 15⅓ inches in diameter at the center, and has six collars or offsets. It weighs 19,000 pounds. Last week a shaft for the Iron Duke, of Gray's Line, was forged under the 17-ton hammer and placed in the annealing furnace. It will weigh, when completed, between 12,000 and 13,000 pounds.

The work on the new shops of the Baltimore and Ohio road, at Glenwood, has been delayed by the non-arrival of material.

OHIO.

At a meeting of the William Anson Wood Mower and Reaper Works, in Youngstown, on Sept. 10, C. H. Andrews was elected president; John Stambaugh, vice-president; George J. Margerum, secretary, treasurer and general manager, and Frank Wood, superintendent. C. H. Andrews, John Stambaugh, Henry Tod, B. M. Barber, Paul Wick and G. J. Margerum were elected directors.

The rumors of the sale of the Brilliant Glass Works, at Steubenville, have not been confirmed. It is said the purchaser, F. B. Coulter, does not want the property. It is likely it will have to be reappraised, although the appraisement—$22,500—is $15,000 less than the works cost.

A slight flow of gas has been obtained at the well which is being driven at the Jefferson Iron Works, at Steubenville, at a depth of 1350 feet. When the gas was lighted it blazed up about 6 feet above the ground. The boring was continued in the hope of reaching a larger vein.

The new furnace of Means, Kyle & Co., at Hanging Rock, will probably be ready for blast by the first of next year. The stack is 65 feet high by 16 feet bosh. The Whitwell ovens, which are nearly completed, were erected by Witherow & Gordon.

A boiler 68 feet long, at the Cleveland Rolling Mill Company's blast furnace, exploded on the evening of Sept. 11, demolishing the building. A dozen men were working near, but only four were injured, none seriously. The damage is probably $15,000. The cause of the explosion is unknown.

The Jefferson Iron Works, at Steubenville, which have been making extensive repairs about the mill, factory and furnace the past three months, start up in full this week. The puddlers went to work last Saturday, and the nailers are preparing their machines so as to be ready.

A change in the machinery is being made at the Paul gas well, at Martin's Ferry. This well is down over 1500 feet, and boring will be resumed this week. The well at the Laughlin nail mill is going down steadily, and at present is down about 900 feet. Several more wells are under consideration in that locality, dependent upon the success of the two now going down.

Benwood Furnace, at Martin's Ferry, blew in last week.

WEST VIRGINIA.

Dalzell Bros., who are shortly to establish a new flint-glass factory at Wellsburg, propose to use gas instead of coal in the flattening department. The capacity of the Panhandle Works, at the same place, is to be doubled and the capital stock increased to $10,000. The new factory will measure 90 x 72 feet, with an eight-pot blowing furnace. Work on the improvements is to commence at once.

Bessemer steel works are now in course of construction at Benwood similar to those being erected at Riverside Furnace, about half a mile distant, and at Bellaire, Ohio. The buildings are to be principally of iron, and each will have two 4½-ton converters. There will also be a 32-inch blooming mill. The steel is to be used in the manufacture of nails.

ILLINOIS.

The Excelsior Iron Works, of Chicago, are full of orders, as usual.

The new machine shops of Benjamin, Fischer & Mallery, in South Chicago, are running full and employing from 80 to 85 men. The firm are doing a large business in wood-working machinery.

The Chicago Forging Company, impelled by the rapid extension of their business, have increased their capital stock from $50,000 to $100,000.

J. J. Ryan & Co., of Chicago, have recently doubled the capacity of their works, and are running full on orders for railway journal bearings and general brass castings.

Kirk, Schlenker & Co., of Chicago, have started work in the new addition to their works. They will make a specialty of the Dunn fire-escape.

The Chicago Forge and Bolt Works are building a new 40 x 60 addition to their works.

The South Chicago mills were to have started up last Monday, the recent strike having been amicably settled last week.

The Cairo Iron and Machine Works are adding to their machinery. They are filling an order for the Western Nail Company, of Belleville.

The machine shops of Chicago are all quite busy at present, and large orders are being turned out.

ALABAMA.

It is announced that two furnaces will be built at Anniston this fall.

The Briarfield Iron Works have established a nail factory, and are now manufacturing nails—the first ever turned out in Alabama.

KENTUCKY.

The Fred. J. Meyers Mfg. Company, Covington, report they are full of orders and working their employees overtime. They are putting in all the ironwork for the new court house at Newport, and working on several large contracts in the West. They have in course of erection a new building for their ironwork department, 30 x 90 feet, to be completed by the 1st of November.

The American Wire Nail Company, Covington, are running their establishment on full time and report trade good.

MICHIGAN.

The Detroit File Works have recently placed a new boiler and a 100-horse-power Fulton engine in their establishment, and have added new machinery, necessitated by the growth of their business.

MISSOURI.

Work has been begun on the new two-story addition to the works of the Groom Shovel Company, of St. Louis. The addition is to be completed by October 1.

The St. Louis Wire Mill Company have occupied their new warehouses, and are now receiving plenty of orders. They are furnishing power to operate the plant of the new Western Union Wire Fence Company.

The Missouri Malleable Iron Company, of St. Louis, are contemplating large additions to their works.

The Excelsior Mfg. Company are running out 2500 stoves per week, and are working up quite a trade on the Pacific coast. They are bringing out a new hard-coal cooking stove, the invention of their superintendent, which is said to possess meritorious features.

The works of the Standard Tool Company, St. Louis, are still idle.

The Hooker-Colville Steam Pump Company, of St. Louis, are about to erect a large addition to their works, and will also add to their machinery. They are running their works double turn.

WISCONSIN.

The North Chicago Rolling Mill Company have decided to build a $100,000 nail mill at Bay View, and will employ 600 men. The building will be put up at once and the first nails made and delivered by January 1, 1884.

The Fon du Lac Iron Company, of Fon du Lac, will commence the manufacture of Lake Superior charcoal foundry iron at their new furnace about October 1. This furnace was built in 1873, has a producing capacity of about 10,000 tons per year, but was never in operation. Messrs. Chas. Himrod & Co., of Chicago, are their sales agents, and will control their entire output, which will be known as the Fon du Lac brand.

The Colorado Coal and Iron Company's Coal Lands.

Hearings have been begun in an important suit involving the right of the Colorado Coal and Iron Company to the tract of some 7000 acres near Trinidad, known as the El Moro Coal Field.

The style of the suit, which has been in the courts since 1880, is the "United States *vs.* the Colorado Coal and Iron Company and others." The claim of the Government is that the original patents to these lands, which are now of almost fabulous value on account of furnishing coal and coke for the mining and smelting industries of the company in possession, were issued by fradulent conspiracy on the part of the Register, the Recorder of the United States Land Office and others. The patents to the land were issued in 1873, and the attempt of the Government is to show that the lands, being mineral lands, were secured by fraudulent entry, while forgery was resorted to in furtherance of a scheme to secure title. The patents being issued in 1873, the Southern Colorado Coal and Town Company began operations in 1875, and did a great deal in developing and improving the property. In 1880 the Coal and Town Company and others were consolidated into the company against which action was first brought by the Government in the same year. During the progress of the case an enormous amount of testimony has been taken, and about all that remains is the making of the final arguments. The claims of the defendant company are that it was a *bona fide* purchaser; that no notice of alleged frauds was given by the Government until over $500,000 had been expended in developing the property, and, in general, that the company's title is valid. The attorneys in the case are, for the Government, Judge W. S. Decker, formerly United States District Attorney for Colorado, and now special assistant retained in this case, and for the company and the bondholders, who hold $300,000 in bonds, Lyman R. Bars, of Colorado Springs; Edward O. Wolcott, of Denver; John M. Waldon, of Pueblo, and John G. Milburn, of Buffalo, N. Y.

The check-weighman law went into force in Pennsylvania on September 1 at every bituminous coal mine where coal is mined by measurement. All cars filled shall be uniform in capacity at each mine. No unbranded car shall be used under a penalty of $10 a day for each day it is used. The miners of a pit, or a majority of those present at a meeting called for that purpose, have the right to employ a competent person as check-weighman or check-measurer, as the case may require, who shall be permitted at all times to be present at the weighing or measurement of coal; also, have power to weigh or measure the same, and during the regular working hours to have the privilege to balance and examine the scales or measure the cars. When differences arise between the check-weighman or check-measurer and the agent or owners of the mine as to the uniformity, capacity or correctness of scales or cars used, the same shall be referred to the mine inspector of the district where the mine is located, whose duty it shall be to regulate the same at once; and in the event of said scales or cars proving to be correct, then the party or parties applying for the testing thereof to pay all expenses thereof. But if not correct, then the owner or owners of said mine to pay all the cost and charges of making said examination. The act also provides that nothing therein contained shall be construed to prevent operators and miners contracting for any method of measuring and screening the coal mined by such miners as they may contract for.

Consul McLain, of Nassau, says that considerable interest has been felt in that Colony over the changes made in the United States tariff which took place on July 1, especially as some of the modifications affect the exports of the Bahamas. The placing on the free list of bananas, pineapples and sundry other fruits which have heretofore paid from 10 to 20 per cent. duty was hailed with pleasure, and has given much encouragement to planters and shippers to increase the production, and has imparted a fresh stimulus to the industry. The reduction of the duty on fruit preserved in its own juice was also acceptable. It is believed that an impetus will thus be given to the pineapple trade that will prove highly beneficial both to the Colony and to the United States, where the fruit will be shipped and the proceeds spent.

The Iron Age Directory

And Index to Advertisements.

THE IRON AGE BOOK DEPARTMENT

ENGINEERING.

Auchincloss.—Link and Valve Motions. By Wm. S. Auchincloss; 7th edition, revised and enlarged, 21 plates, 37 illustrations and a copper-plate engraving of the travel scale; 170 pages, 8vo, cloth; 1880 . . . . . $3

This handbook for mechanical engineers contains the application of the slide-valve and link motion to stationary, portable, locomotive and marine engines. All dimensions of the valve may be easily found by means of a printed scale, and the proportions of the link determined without the assistance of a model.

Bacon.—Treatise on the Richards Steam Engine Indicator. By F. W. Bacon, M. E.; 3d edition, illustrated, 179 pages, 12mo, cloth; 1880 . . . . . $1

All necessary information is furnished concerning the indicator, its application and directions for its use. Additions, as developed by American practice, and an appendix of formulæ and rules useful to engineers, are given in this revised edition.

Baker.—Land and Engineering Surveying. By T. Baker, C. E.; new edition, 231 pages, 12mo, cloth; London (Weale's series), 1879 . . . . . $0.80

A rudimentary treatise on the subject. Students and practical men who have not studied the higher mathematics will find everything of importance in this little book.

Campin.—A Practical Treatise on Mechanical Engineering. By Francis Campin, C. E.; 29 plates and 100 illustrations, 416 pages, 8vo, cloth; 1863. . . . . $6

This work comprises practical remarks upon metallurgy and descriptions of workshop machinery and tools. The processes of molding, casting and forging are explained, together with an analysis of iron and iron ores. Observations are added upon the construction of steam boilers, and there are chapters on furnaces used for smoke prevention, and upon explosions, by John Bourne and Robert Armstrong. The management of steel and the case-hardening of iron are also taken up.

Clark.—Fuel; Its Combustion and Economy. By D. K. Clark, C. E.; 394 pages, 12mo, cloth. London 1879. . . . . $1.50

This work is an abridgement of the standard treatises on "Combustion of Coal," by C. W. Williams, and "Economy of Fuel," by T. S. Prideaux. In addition, the editor has clearly summarized the more recent results of progress, with chapters on the composition and combustion of various fuels now in use.

Du Bois.—Elements of Graphical Statics. By Prof. A. J. Du Bois; 3d edition, 8vo, cloth, 1 vol., text, 408 pages, and an atlas of 32 plates; 1879 . . . $3.50

This work forms a complete treatise upon every variety of cranes, bridge, roof and suspension trusses, braced and stone arches, pivot and draw spans, continuous girders, &c. It includes graphic and algebraic methods of calculation of the strains in every structure that occurs in engineering practice. It is one of the most complete presentations of the new graphic method in English professional literature.

Knight.—The Mechanician; a Treatise on the Construction and Manipulation of Tools. By Cameron Knight; 3d edition, 96 plates, containing 1147 illustrations, pp. 397, 4to, cloth. London, 1881. $7.25

This work is divided into three principal parts, the first devoted to forging and detailed descriptions of engineering tools and appliances; the second includes the application of tools to engine making, and the third part consists of hand and machine processes, turning, screw cutting, &c. The author's practical experience of 20 years in engine-making makes this a valuable book of reference.

Rontgen.—Principles of Thermo-Dynamics. By Robert Rontgen; 103 illustrations, 670 pages, 8vo, cloth; 1880 . . . . . $5

This translation from the German, revised and enlarged by Prof. A. J. Du Bois, of the Sheffield Scientific School, is an able and complete treatise on the mechanical processes of heat, with special applications to hot-air, gas and steam engines.

Law and Burnell.—Civil Engineering. By Henry Law and Geo. R. Burnell; 6th edition, revised by D. Kinnear Clark, C. E., with large additions in recent practice, 319 illustrations, 638 pages, 12mo, cloth. London (Weale's series), 1881 . . . . . $2.60

Treats of common roads and railways, bridges and tunnels, with system of their construction, strength of materials, &c. Marine engineering in all its details, hydraulic engineering and drainage are also considered. The language used is simple, mathematical terms being omitted. A very practical and intelligible book.

Mahan.—Civil Engineering. By Prof. D. H. Mahan; new revised edition, edited by Prof. De Volson Wood, with new plates, 637 pages, 8vo, cloth; 1880 . . . . $5

This popular treatise, by the late Professor Mahan, of the U. S. Military Academy at West Point, has long been considered as a standard. It is essentially practical, and is surpassed by no other work of its kind. Professor Wood has added valuable new material, and there is a chapter on river improvement, by F. A. Mahan, and a complete index.

Merrett.—Land and Engineering Surveying. By H. S. Merrett; 3d edition, 41 plates, with illustrations and tables, 317 pages, 8vo, cloth. London, 1878 . . $5

A complete work of reference and instruction for the civil engineer. There are careful descriptions of the instruments required, and the details of surveying, plotting, leveling, &c., are practically explained and illustrated by fine plates and diagrams drawn to scale.

Rankine.—Useful Rules and Tables. By Prof. W. J. M. Rankine; 6th edition, thoroughly revised by W. J. Millar, C. E., with numerous diagrams, 384 pages, 8vo, cloth. London, 1883 - - - $4.25

This valuable collection of rules and tables relating to mensuration, engineering, structures and machines has been added to, in the present edition, by an appendix with tables, tests and formulæ for the use of electrical engineers contributed by Prof. Andrew Jamieson.

Richards.—Gas Manufacture. By Wm. Richards; 29 large plates and numerous illus., 364 pages, 4to, cloth. London, 1877 . . $12

This is a comprehensive and practical work on the history, manufacture and distribution of coal gas. It contains complete analyses of coal and a treatise on the chemistry of gas manufacture. Plans, specifications and illustrations of retorts, tanks, mains, meters, burners, &c., are given, with full explanations and descriptions of retort settings and buildings.

Sennett.—Marine Steam Engine. By Richard Sennett; illustrated by plates and diagrams, 659 pages, 8vo, cloth. London, 1882. . $8.40

One of the latest and best English works on this subject. A brief but comprehensive sketch is given of the progress made in marine engineering during the past 30 years. The author, avoiding the use of mathematics as far as possible, dwells in an efficient and practical manner upon the mechanism and management of the marine engine and all its appliances. There are special chapters upon the boiler, the efficiency of steam and methods of propulsion.

Simms.—Practical Tunneling. By F. W. Simms, C. E; 3d edition, revised and enlarged by D. K. Clark, C. E.; 21 folding plates and 106 illustrations, 354 pages, 8vo, cloth. London, 1877 . . . $7.50

Explaining in detail, with numerous examples of modern practice, shaft-sinking, excavating and all the operations connected with tunneling. Also an elaborate account of the construction of the Mont Cenis and St. Gothard Tunnels. Minute and valuable experiences and data are presented relating to the heading operations, rock-boring machinery, means of ventilation, labor, cost, &c., of these tunnels, together with the methods of excavating by compressed air.

Simpson.—Manual of Screw Cutting. By William Simpson; 15 pages, 16mo, cloth $0.30

This little book gives rules for calculating the change gear on screw-cutting lathes to cut square and angular threads, per inch or per pitch, with two or four gears. Examples are given under each rule. Table for United States screw threads, as well as Whitworth's, are also included.

IRON, STEEL AND METALLURGY.

Byrne.—The Practical Metal Worker's Assistant. By Oliver Byrne; revised edition, 609 illustrations, 683 pages, 8vo, cloth; 1872 . . $7

A comprehensive and complete work of instruction for metal workers, comprising metallurgic chemistry and the process of working iron, steel and all metals and alloys. Special attention is given to the best methods of forging, hardening and tempering, casting and founding, soldering, &c. The processes dependent upon ductility are explained, and there are chapters upon screw-cutting and other tools. The latter part of the book consists of the history and application of the art of electro-metallurgy to manufacturing purposes, including descriptions of galvanic batteries, and the processes of electrotyping and electroplating. There is also an appendix upon the manufacture of Russian sheet iron, Malleable iron castings and improvements in Bessemer steel.

Davies.—Metalliferous Minerals an Mining. By D. C. Davies, M. E. 2d edition, revised, 148 illustrations, 450 pages, 8vo, cloth. London, 1880. . . . . $5

This book is an excellent and systematic description of the conditions under which metallic ores are found in the different countries of the world. It explains the origin of deposits, and defines the localities occupied by the various metallic ores, with practical details in the working of mines and the dressing of ores.

De Koninck—Dietz.—A Practical Manual of Chemical Analysis and Assaying. By L. L. De Koninck and E. Dietz; American edition, edited with notes and an appendix on iron ores, by A. A. Fesquet; 282 pp., 12mo, cloth, 1873 . $2.50

This work treats exclusively of chemical analysis and assaying as applied to the manufacture of iron from its ores, and to cast iron, wrought iron and steel. The apparatus and operations are described, and there is also a chapter on the assay of fuels. The work is very thorough, and the methods of analysis of the different elements are clearly intelligible.

Kirk.—Founding of Metals. By Edward Kirk; 4th edition, 21 illustrations, 272 pages, 8vo, cloth; 1881. . . . . $2.50.

These notes contain the observations and experience of the 10 years' practice of a practical foundryman and chemist. Omitting chemical and technical terms, the author treats upon the forming of alloys and presents a general description of all the metals, minerals and gases used in the art of founding.

Spretson.—Casting and Founding. By R. E. Spretson; 2d edition with 82 plates drawn to scale 412 pages, 8vo, cloth. London 1880 . . . . . $

The object of this work has been to collect in one volume every subject on which a founder will require information. It embraces a full discussion of modern English and Continental practice in casting, founding, molding and case-hardening iron, steel, brass, bronze and other materials a founder may have to deal with. The illustrations show working drawings of cupolas, furnaces, blowing engines and all the machinery necessary to the art. The methods of founding statues, bells and articles used for art work and ornamentation are practically described

Urquhart.—Electro-Plating. By J. W. Urquhart; with numerous illustrations, 216 pages, 12mo, cloth. London, 1882 . . . . . $2

Any ordinarily intelligent person may become skilled in the practice of electrotyping by consulting this practical handbook, which gives, in simple language, working directions for copper, silver, nickel and gold plates; with clear explanations of terms and tools dapted to the work.

West.—American Foundry Practice. By Thomas D. West; illustrated, 391 pages, 8vo, cloth; 1882...$2.50

A practical treatise on the management of cupolas and the melting of iron. The author, a practical foundryman, treats of the molder and his trade, green-sand molding; loam and dry-sand molding, and the manipulation of iron castings. The work is a valuable addition to the list of books upon this subject.

HYDRAULICS.

Bayles.—House Drainage and Water Service. By James C. Bayles; 4th edition, 3 folding plates and 30 illustrations, 365 pages, 8vo, cloth; 1882 . . . . . $3

This work discusses the subject of house drainage and water service in cities, villages and rural neighborhoods in a manner instructive alike to architects, mechanics and house owners. The best forms of plumbing practice are described and illustrated, and the principles upon which good work depends explained. The book is of practical value to the building trades and all interested in the mechanics of hygiene. The contents are as follows: Hygiene in its practical relations to health. Sewer gas. Waste and soil pipes. Traps and seals and the ventilation of soil pipes. Water closets. Service pipes and water service in city houses. Tanks and cisterns. The chemistry of plumbing. Elementary hydraulics applicable to plumbing work. Sanitary construction and drainage of country houses. Water supply in country districts. Suggestions concerning the sanitary care of premises. The plumber and his work.

Box.—A Practical Treatise on Mill Gearing. By Thomas Box; 3d edition, 11 plates, 120 pages, 8vo, cloth. London, 1882 . . . $3

These rules and tables for calculating the power of wheels and shafts are the results of the successful experience of a practical millgearer. Numerous examples of gearing in practice are given.

Du Bois.—Hydraulics and Hydraulic Motors. Translated by Prof. A. J. DuBois, from the 4th edition of "Weisbach's Mechanics;" 380 illustrations, 675 pages, 8vo, cloth; 1878 . . . . . $5

This work consists of numerous practical examples for the calculation and construction of water-wheels, including breast, undershot, back-pitch and overshot wheels, as well as a special discussion of the various forms of turbines.

Glynn.—Water Power. By Joseph Glynn; 6th edition, 151 illus., 162 pages, 12mo, cloth; London (Weale's Series), 1879 . . $0.80

This is a rudimentary treatise on the power of water as applied to drive flour mills and to give motion to turbines and other hydrostatic engines.

Grier.—Rural Hydraulics. By W. W. Grier; illustrated, 35 pages, 8vo, cloth; 1877 . . . $0.75

In plain and practical terms the author outlines methods for supplying water to country houses, giving full descriptions of springs and wells, pumps and hydraulic rams, with instructions in cistern building, laying of pipes, &c.

DRAWING.

Davidson.—Drawing for Machinists and Engineers. By Ellis A. Davidson; 3d edition, 40 full-page and 6 three-page plates, and more than 200 engravings and working drawings, 12mo, limp cloth. . $2

The author in this work has presented the subject of drawing in a manner best adapted to the needs of engineers and machinists, and has succeeded in producing a very useful handbook

Le Blanc-Armengaud.—Engineers' and Machinists' Companion. By M. Le Blanc and M. Armengaud; 71 steel plates and 246 woodcuts, 116 pages, 4to, half morocco . $15

This book has been the fountain-head from which a host of drawing books have taken their diagrams and illustrations. In the illustrations of machinery completely shaded there is no work which at all approaches it in beauty and completeness. Outline details of machinery are given in great profusion, and the plates throughout the work are very perfect. This is an abridgement of the original French work, and most of the details are of foreign machinery. The chapters on coloring drawings and directions for color-mixing are all that could be desired.

Mahan.—Industrial Drawing. By Prof. D. H. Mahan; revised and enlarged, and chapter on Colored Topography added by Prof. D. H. Thompson, of Troy; 30 plates, 8vo, cloth $3.50

Comprising the description and uses of drawing instruments, the construction of plane figures, the projections and sections of geometrical solids, architectural elements, mechanism and topographical drawing.

Tomkins.—Machine Construction and Drawing. By Prof. E. Tomkins; 1 volume text, 12mo, 368 pages, and 1 volume 45 plates, 4to, cloth; 1878 . . . $3.75

This word treats of the application of geometrical drawing to the representation of machinery, strength of materials, teeth of wheels and the different kinds of motion. Useful tables and suggestions are appended.

Warren.—Elementary Projection Drawing. By S. E. Warren, C. E.; 5th edition, 24 plates, 12mo, cloth $1.50

The present edition contains instructions on drafting instruments and a new division on the elements of machines. Its contents are as follows: 1. Projections of simple solids, prisms, pyramids, cylinders, cones and spheres, and their intersections and developments. 2. Wood, masonry and metal details, carpentry joints, &c., to be drawn to scale from measurements. 3. Elementary shadows and shading, sufficient for ordinary practice, and with new examples. 4. Isometrical and oblique projections, or mechanical perspective. 5. (New.) Elements of machines, cranks, eccentrics, toothed wheels, screws, &c. 6. Elementary structures and machines.

ELECTRICITY.

Hedges.—Useful Information on Electric Lighting. By K. Hedges; 3d edition, revised and enlarged, 156 pages, 8vo, cloth. London, 1882. . . . . $1.75

This work will prove interesting to the general reader and valuable as a text-book to the student, and contains the latest facts and discoveries relating to the electric light to 1882. It has clear and concise descriptions of the different lamps and generators, divisions of the light, cost of working, &c.

Hospitalier.—Modern Applications of Electricity. By E. Hospitalier; translated and enlarged by Julius Maier, Ph.D.; 170 illustrations, 459 pages, 8vo, cloth; 1882 . . . . . $4.50

The author gives a history of the progress of galvanism, thermo-electricity and dynamic electricity from the first crude constructions to the most perfect form of battery. The work is a thorough and comprehensive compendium of electrical engineering written by an expert. There are complete accounts of the Edison, Brush, Swan and other systems of electric lighting, also of the telephone. Considerable new matter has been added by the translator, including many recent inventions.

Lockwood.—Practical Information for Telephonists. By T. D. Lockwood; 192 pages, 12mo, cloth; 1882. . . . . $1

This little work, by the electrician of the American Bell Telephone Co., describes in a practical and readable manner the latest methods for constructing and working telephone lines.

Niaudet.—Elementary Treatise on Electric Batteries. By A. Niaudet; translated by L. M. Fishback; with an introduction by Geo. d'Infreville, electrician of the Western Union Telegraph Company; 2d edition, with numerous illustrations, 266 pages, 12mo, cloth; 1882. $2.50

This work describes every form of battery now in use, and its author is well known to electricians. It will guide the beginner in the choice and management of batteries, and even the profession will find new matter presented and old material worked to new developments.

Prescott.—Electricity and the Electric Telegraph. By G. B. Prescott; 5th edition, illustrated, 963 pages, 8vo, cloth; 1882. . . . . $5

This work, by the electrician of the Western Union Telegraph Company, is a comprehensive and accurate summary of the present state of electrical science in this country and abroad. The descriptive portion of the book is very complete, including original illustrations of the latest approved telegraphic apparatus. The unusual facilities of the author for research and experiment make this manual valuable to the profession and of interest to all interested in electrical science.

Higgs.—Candle-Power of the Electric Light. By Paget Higgs; 13 pages, 8vo, paper. London, 1882 . $0.25

The author compares the various arc and incandescent lights, the economical ratio of these systems, and treats upon the relation of lighting power to quantity of current and the source of loss in existing lamps.

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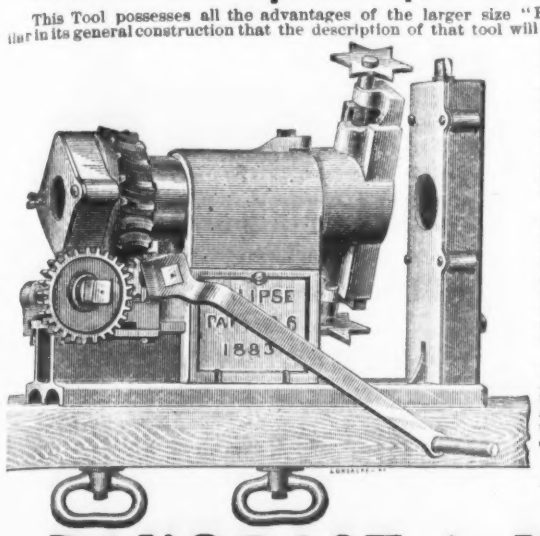

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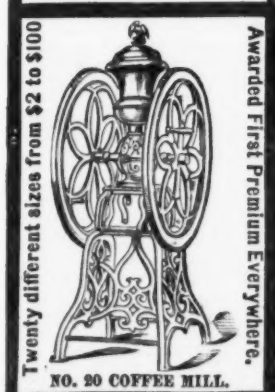

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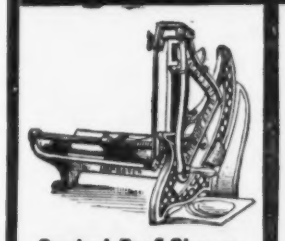

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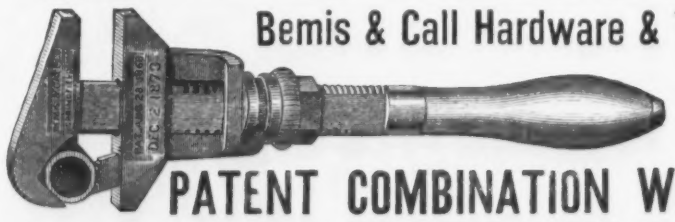

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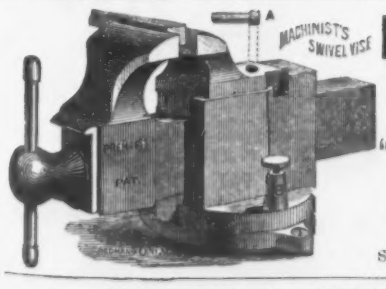

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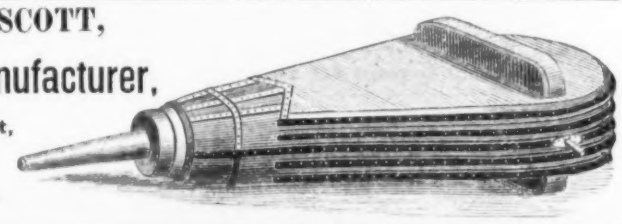

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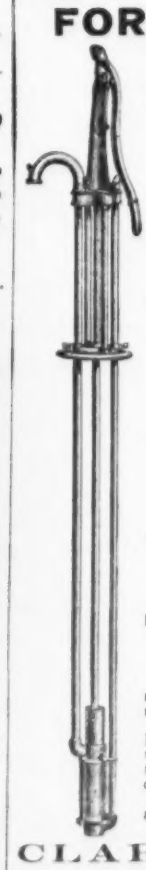

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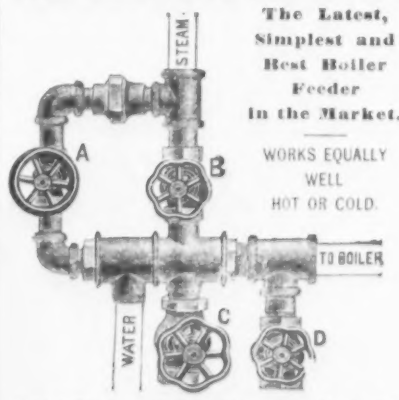

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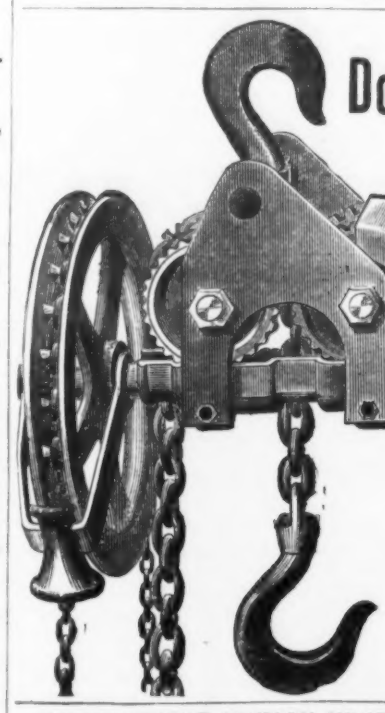

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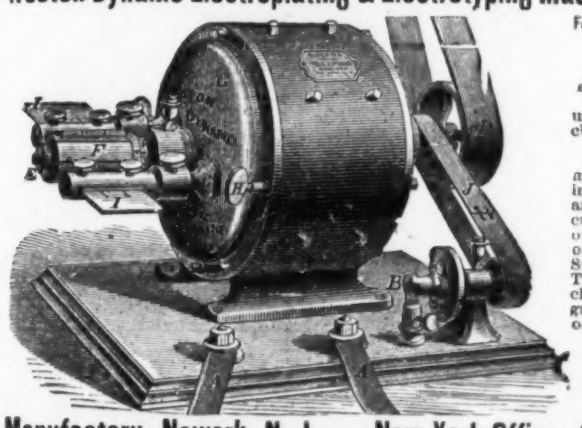

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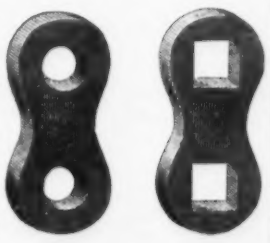

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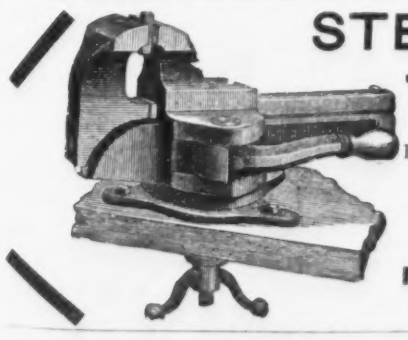

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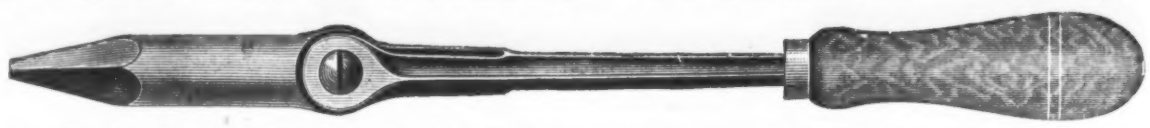

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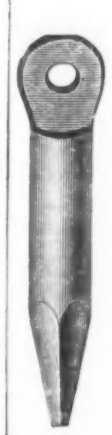
A. MORDECAI, Lieut.-Col. of Ordnance, Commanding.



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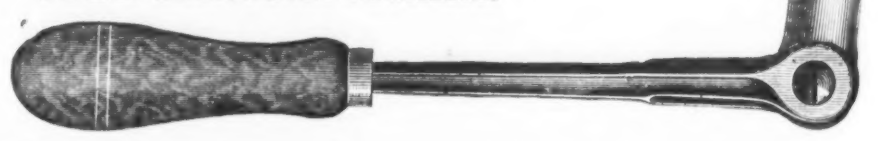

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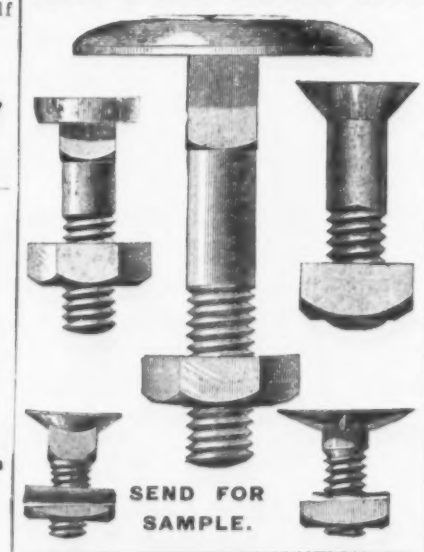

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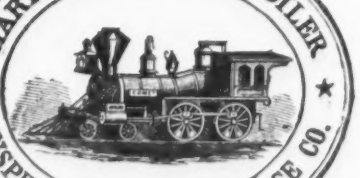

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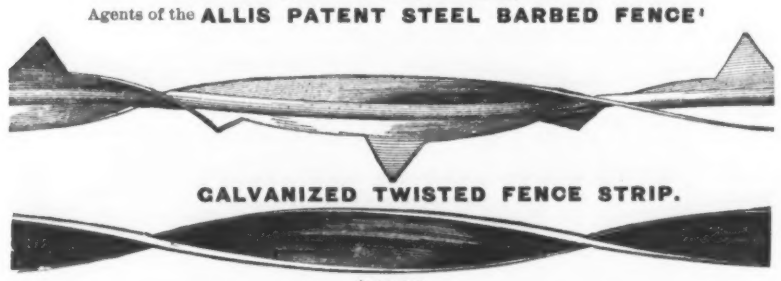

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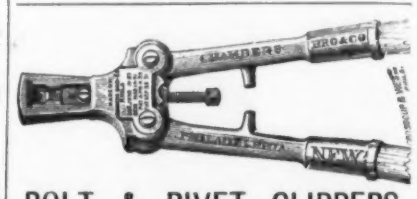

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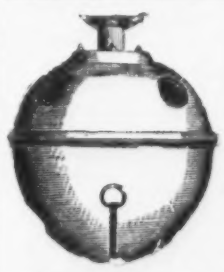

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Ironmonger Diary and Text Book for 1884

(now in course of preparation) as complete a list as possible of trade-marks, brands, specialties, &c., made and in use in all parts of the world.

This list will exclude all ordinary trade announcements proper, and will be strictly confined to trade-marks and brands, whether blocks, electros, or other appliances for illustrations, with just sufficient letter-press to describe the kind of article to which the mark, &c., is applied, and the names and addresses of the owners or lawful users. For the sake of uniformity in space and charges, each mark will occupy a space measuring 1 inch deep by 1½ inches wide, and the uniform charge will be $2.50 (10s.) only for each such space, payable in advance, unless we have already an open advertising account with the firm giving the order.

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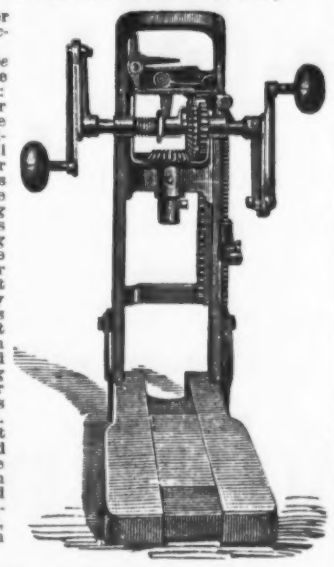

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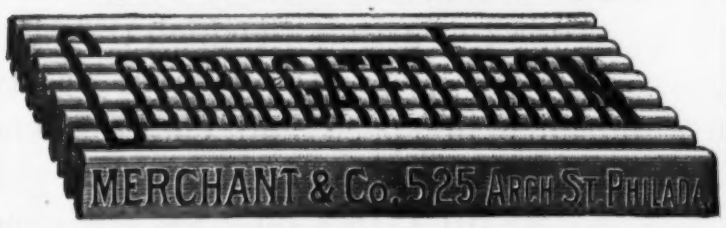

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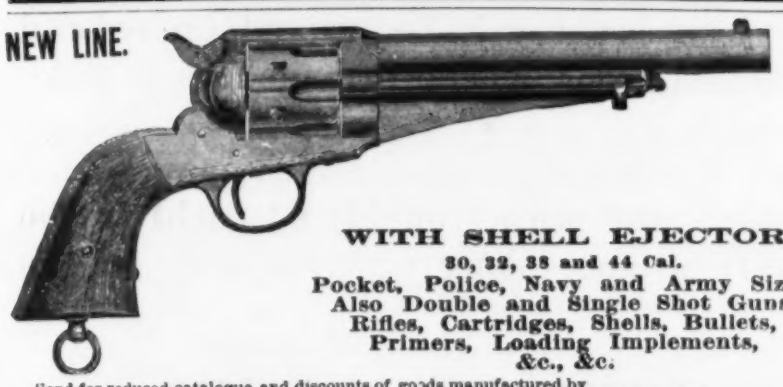

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We manufacture the only successful Automatic Scraper in the world. Our Dumps are the lightest and strongest scrapers made. We use two pieces of steel pressed into shape, which is superior to the old method of using but one piece, for when that breaks the whole scraper is ruined, while ours is so constructed that we can replace any part at a trifling expense. We make three sizes, to meet the wants of all classes of Earth Workers. Especially suited for Contractors and Township Road Work. Send for circulars. Manufactured by

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CLEVELAND FLUE CLEANER MANUFACTURING CO.,

The most simple, durable and economical steam flue cleaner.

It saves from 15 to 25 per cent. in labor and fuel.

Send for Circular and Price List of Cleaner and Hose. 22 & 24 POWER BLOCK CLEVELAND, O.

FOUNDRYMEN, ATTENTION!
FOR THE
Aiken & Drummond Patent Power Molding Machines
SEND FOR DESCRIPTIVE CIRCULAR TO
THE DRUMMOND MFG. CO., Louisville, Ky.

NOVELTY IRON FOUNDRY,
HAIGHT & CLARK,
16 & 18 DeWitt Street, ALBANY, N. Y.,
MANUFACTURERS OF FINE GRAY IRON CASTINGS
OF EVERY DESCRIPTION.
Rosettes and Pickets for Wire Workers, Castings for Furniture and Piano Manufacturers. Iron and Metal Patterns of all kinds a specialty. Correspondence solicited.
JAPANNING. BRONZING.

WITHEROW & GORDON,
Engineers & Contractors
PITTSBURGH, PA.
Agents for the
WHITWELL
HOT BLAST STOVES.
OVER 600 IN USE.

The following parties either have them in use or under construction.

Cedar Point Iron Co., N. Y
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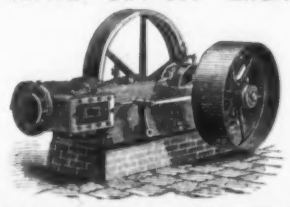
Milton Coal and Iron Co., Ohio
Winona Furnace Co., Ohio.
Moss & Marshall, Ohio.
H. Campbell & Sons, Ohio.
Hocking Valley Iron Co., Ohio.
Cleveland Rolling Mill Co., Ohio.
Meier Iron Co., Ill.
North Chicago Steel Co., Ill.
Union Iron and Steel Co., Ill.
Means & Culbertson, Ky.
Ashland Furnace Co., Ky.
Norton Iron Co., Ky.
Southern States C., I. and S. Co., Tenn
Sewanee Furnace Co., Tenn.
James C. Warner, Rising Fawn, Ga.
Ohio Iron Co., Zanesville, O.
Sloss Furnace Co., Ala.

AUTOMATIC CUT-OFF ENGINES.



Embodying a new system of regulation. **The Governor Weighs the Load.** The most perfect governing ever obtained. Send for Circular B.

BALL ENGINE CO.,
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AGENTS IN ALL FOREIGN COUNTRIES.

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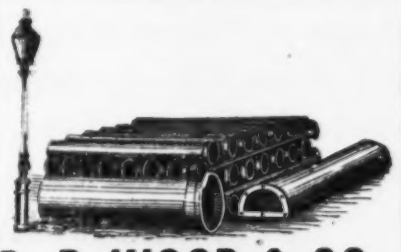
M. HOWSON, Engineer and Solicitor of Patents.
C. HOWSON, Attorney at Law and Counsel in Patent Cases.
SEND FOR CIRCULARS.



R. D. WOOD & CO.,
Philadelphia,
Manufacturers of
Cast Iron Pipe
FOR WATER AND GAS,
Lamp Posts, Valves, &c.,
Mathew's Pat. Anti-Freezing Hydrants.
400 CHESTNUT STREET.

THE LITTLE GIANT

Wagon Tire Upsetter.
The Cheapest and Best.
LITTLE GIANT MFG. CO.,
Send for Circular. Millport, N. Y.

CLEVELAND BLOCK CO.,

MANUFACTURERS OF
MALLEABLE IRON
TACKLE BLOCKS
Superseding all Others.
Send for Illustrated Catalogue
129 RIVER STREET,
Cleveland, Ohio, U. S. A.

MACHINERY FOR
Straightening and Cutting Wire
Of all Sizes to any Length.
Send for Catalogue.
JOHN ADT,
New Haven, Conn., U. S. A.

Prouty's Patent
PEERLESS FORCE PUMP.
Has Self-Adjustable Foot Rest.

NEW AUTOMATIC COMPENSATING PACKING.

It will throw a continuous jet FROM FORTY TO SIXTY FEET. A new pattern jet and spray nozzle is sent with each pump.

Especial attention is called to the material and workmanship exhibited in these pumps.

LIST PRICE, $8.

THE NEW ENGLAND BUTT CO.
PROVIDENCE, R. I.
NEW YORK OFFICE, 99 Chambers St.

P. LOWENTRAUT,
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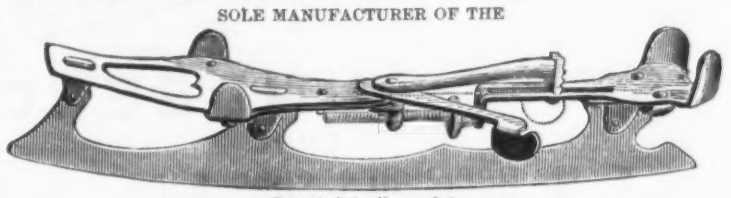

(Patented April 19, 1881.)

EUREKA CLUB SKATE.
SOLE AGENTS:
SMITH, SELTZER & CO., Philadelphia, Sole Agents for the State of Pennsylvania.
PAPPENHEIMER HARDWARE CO., Cincinnati, Sole Agents for the State of Ohio.
SIMMONS HARDWARE CO., St. Louis, Sole Agents for the city of St. Louis
ALSO MANUFACTURER OF
MECHANICS' TOOLS, GENERAL HARDWARE.
Light and Heavy Steel Ladles a Specialty.
HOUSE FURNISHING GOODS
AND
Shoemakers' Tools.
276, 278, 280, 282 HALSEY STREET, NEWARK, N. J.

MORSE TWIST DRILL AND MACHINE CO.
NEW BEDFORD, MASS., Sole Manufacturers of
Morse Patent Straight-Lip Increase Twist Drill,
Beach's Patent Self-Centering Chuck, Solid and Shell Reamers,
BIT STOCK DRILLS,

DRILLS FOR COES, WORCESTER, HUNTER AND OTHER HAND DRILL PRESSES. BEACH'S PATENT SELF-CENTERING CHUCKS, CENTER AND ADJUSTABLE DRILL CHUCKS, SOLID AND SHELL REAMERS DRILL GRINDING MACHINES. TAPER REAMERS, MILLING CUTTERS AND SPECIAL TOOLS TO ORDER.

All Tools exact to Whitworth Standard Gauges.

GEO. R. STETSON, Supt. EDWARD S. TABER, Treas.

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Successors to Milo Peck, Manufacturers of

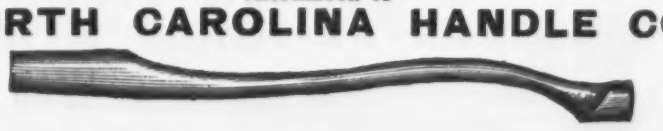
PECKS DROP PRESS
PECK'S DROP LIFTER is the only one which has its parts cushioned. Being thus cushioned they are the most durable Lifter in the market.

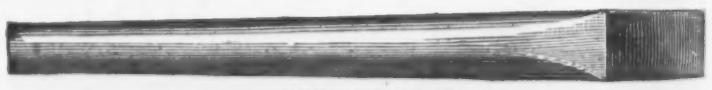
Can be attached to any drop now in use.

Send for Illustrated Catalogue.

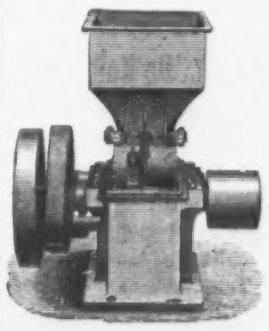
Cor. Lloyd and River Sts. **New Haven, Conn.**

V. G. HUNDLEY,
PROPRIETOR OF
NORTH CAROLINA HANDLE CO.





MANUFACTURER OF
Handles and Spokes,
79 Reade Street and 97 Chambers Street, - - - - NEW YORK.
HARDWARE COMMISSION MERCHANT.



NEWELL'S

UNIVERSAL MILL.

Pulverizes everything—hard, soft, sticky, and gummy. Grain, Drugs, Chemicals, Clay, Guano, Cotton Seed, Bark, &c., &c. A wonderful machine for grinding Corn, Oats, Feed, &c. Also Steam Engines, Boilers, &c., at lowest rates. Send for circular.

10 BARCLAY STREET,
NEW YORK.

PHILADELPHIA.

Corrected Weekly by Lloyd, Supplee & Walton.

Terms, 30 days. For 60 or 90 days, interest added at 10% per cent. per annum.

Anvils.
Peter Wrights, ₱ ℔.....11 @ 11½c
Over 300 lbs.....11½c
Trenton.....10½c
Eagle Anvils, American, 100.....dis 20 %

Apple Parers.
Globe Apple Pearers.....$5.50 net
Penn Apple Parers.....$6.50 net
Lots of 10 to 25 dozen special prices

Axes.
Hunt's Kentucky and Yankee, per doz $8.50 @ 9.00
Robert Mann.....$8.00 @ 8.50
Richland Chief.....$7.50 @ 8.00
Beveled Axes.....net add 50c net
Double Bit Axes.....net $14.50 @ 15.50

Augers and Auger Bits.—New List January 7, 1880.
Bates' Nut Augers.....dis 50@55 %
Cook's Augers.....dis 40&10 %
Watrous' Ship Augers.....dis 15 %
Benjamin Pierce Auger Bits.....dis 40 %
Griswold Auger Bits.....dis 50@55 %
Cook's " .....dis 40&10 %
Jennings' " .....dis 10, 10&10 %
Bonney's Pat. Hol. Augers, list $48 ₱ doz..dis 25&10 %
Stearns' Pat. Hol. Augers, list $48 ₱ doz..dis 20&10 %

Balances.
Light and Common.....dis 33⅓ %

Bells.
Bevin Bros. Mfg. Co. Light Hand Bells.....dis 70 %
Swiss Pattern Hand Bells.....60 %
Connell's Door Bells.....dis 15&10
Gt. Western & Kentucky Cow new list.....dis 60

Boring Machines
Upright, without Augers.....List 5.50 } dis 45@50 %
Angular, without Augers.....6.75 }

Bolts.—Eastern Carriage Bolts.....dis 80&10 %
Philadelphia " ....new list dis 70&10 %
Stanley, Wrought Shutter.....dis 50&10 %

Braces.—Barber's.....dis 40&5 %
Backus.....dis 50 %
Spofford.....dis 50&5 %
American Ball.....dis 55 %

Butts.—Cast Fast Joint, Narrow.....dis 45&10&10 %
" " Broad.....dis 45&10&10 %
Cast Loose Joint, Narrow.....dis 55&10&10 %
" " Broad.....dis 55&10&10 %
" Acorn. Loose Pin.....dis 50&10&10 %
" " " Jap'd.....dis 60&10&10 %
" Mayer's Loose Joint.....dis 60&10&10 %
Wrought Loose Pin.....dis 55&10 %
" Table Hinges and Back Flaps...dis 50&10 %
" Narrow. Fast.....dis 50&10 %
" Loose Joint.....dis 55&10 %

Blind Butts.
Parker.....dis 70&2 %
Clark.....dis 70&2 %
Shepard.....dis 70 %
Lull & Porter.....dis 75&10 %
Huffer's.....dis 50 %

Chains.—German Halter and Coil. list December 31, 1881.....dis 50@55 %
Galvanized Pump.....₱ ℔ 9½c net
Best Proof Coil Chain—English.

₱ ℔	13	8¼	7¼	6¼	6	5¾	gold.
	4-16	¾	5-16	⅜	7-16	½	in.

Chisels.—Socket Framing.....dis 65&10 %
Socket Firmer.....dis 65&10 %
Butcher's.....$5.00@$5.25 to £ gold

Casters.—Bed (new list July 1, 1880).....dis 45@50 %
Plate.....dis 45@50 %

Coffee Mills.—Box and Side, new list Jan. 1, 1880.....dis 50 %
Enterprise.....dis 25 %

Cutlery.—Walden Pocket.....new list net
Penna. Knife Co.....new list net
Landers, Frary & Clark, J. Russell & Co., Lamson & Goodnow Mfg. Co. and Meriden Cutlery Co., Manufacturers' prices net.

Drawing Knives.
Hart Mfg. Co.'s.....dis 65&10 %
Adjustable Handle.....dis 20 %

Fry Pans.
Tinned.....dis 45 %

₱ doz.	$3.50	4.00	4.50	5.00	5.50	6.50	7.50	9.00	10.00
No.	0	1	2	3	4	5	6		8

Burnished.....dis 60, 10 & 5 %

₱ doz.	$3.00	3.75	4.25	4.75	5.25	6.00	7.00	8.00	9.00
Fo.	0	1	2	3	4	5	6	7	8

Files.
Nicholson.....dis 45 %
Disston.....dis 45 %
Butcher.....

Fluting Machines.
Eagle—3½ in. roll.....each, $2.15 } dis 35 %
" —4¾ in. roll....." 2.85 }
Crown—4½ in. roll....." 3.40 }
" —6 in. roll....." 4.00 } dis 35 %
" —8 in. roll....." 6.50 }
Geneva Fluter.....dis 25 %
Favorite com. Fluter & Sad Iron.....₱ doz $10.50 net

Hammers.
Yerkes & Plumb's, new list.....dis 30 %
Maydole Hammers.....dis 15 %
Howell A. E. Nail Hammers.....per doz. net $3.75

Handles.
Disston Loop Handles Crosscut.....33c pair net
Boynton Loop Handles Crosscut.....33c pair net

Hatchets.
Yerkes & Plumb, new list.....dis 30 %
Hunt.....dis 25 %

Hinges.
Strap and T.....dis60&10&2 %

Horse Nails.

Nos.	4	6	7	8	9	10	
Globe	24	21	19	18	17	16	dis 12½ %
Vulcan	26	23	21	20	19	18	dis 12½ %
Auxable	30	27	25	24	23	22	dis 30&10 %
" Pol'ed and P't'd & Blued & P't'd	31	28	26	25	24	23	dis 30&10%
Clinton	23	21	20	19	18		dis 30&10%
" Polished & Pointed	24	22	21	20	19	dis	30&10%
Saranac	26	23	21	20	19	18	dis 25 %

Hay and Straw Knives.
Lightning.....per doz, net $18.00
Electric....." " 15.00
Wadsworth....." " 10.50
Walton Straw Knives....." " 17.00

Locks and Knobs.
Branford.....new list dis 50&2 % cash
Gaylord Cabinet.....dis 40 %
American Padlocks.....dis 30, 10&2 % cash
Scandinavian Padlocks.....dis 50 %

₱ doz.	$5.00	5.50	6.50	7.50	8.50	10.00	12.50	dis 60 %
No.	57	58	59	60	61	62	63	
₱ doz.				$18.00		26.00	33.00	dis 60 %
No.				64		65	66	

Lanterns.
Buckeye.....Large list net; small list net
Tubular.....No. 0, $7.50; No. 1, $9 00 ₱ doz net
Guards, 40cents extra.

Lawn Mowers.—Pennsylvania.....} new list
Philadelphia.....} dis 30 %
Excelsior.....}

Lawn and Garden Pumps.
Holland Patent.....List $5.00 dis 10 %

Mattocks.
Long and Short Cutter.....new list....50 %
Pennsylvania Pattern.....dis 50 %

Molasses Gates.
Enterprise Mfg. Co 's Measuring Faucets....dis 5 %
Stebbins' Gates.....dis 70&10%
Lincoln's " .....dis 60&10 %
Landers, Frary & Clark's Petroleum.....dis 20&10 %
Brass Liquor Cocks, new list Jan. 1 1880.....dis 45 %
Cork Lined " .....dis 70 %

Meat Cutters.
Dixon's.....dis 25&5 %
Woodruff.....dis 25&5 %
Stowe.....dis 25&5 %
Hale's.....new list, dis 50, 10&2 cash
American.....dis 20&10 %
Stuffers.....dis 25&5 %
Enterprise Stuffers.....dis 25 %

Planes.—Sandusky Tool Co.....dis 20 %
Ogonts.....dis 20 %
Ohio & Auburn.....dis 20 %
Hailey (S. R. & L. Co.).....dis 20&10 %

Plane Irons.—Ohio Tool Co.....dis 20&10 %
Butcher's.....$5.00@5.25 to £

Plumbs and Levels.
Stanley's Adjustable.....dis 65&10 %
" Non-Adjustable.....dis 65&10 %

Picks.—New list.....50 %

Razor Straps.
Lamont Combination.....per lot, $4.00
" .....1 gross lots $42.00
Imitation Emerson.....₱ doz. 2.00

Rules.—Stanley Boxwood.....dis 70 &10 %
Stanley Ivory.....dis 55&10 %

Steelyards.—Hart's Pattern.....dis 40&10 %

₱ doz.	$14.50	17.75	21 00	26.50	31 00	35.50
Lbs	50	100	150	200	250	300

American Pattern.....dis 40&10 %

₱ doz.	$8.00	10.25	13.75	15.50	18.75	19.50
Lbs.	50	100	150	200	250	300

Squares.
Steel and Iron...dis 50 ; full case dis50&10&2 for cash
Try Squares, Stanley.....dis 50&10 %
Disston's Try Squares.....dis 40 %

Scythes.—Golden Clipper, Damascus Blade, Boxed and Sharpened.....₱ doz $9.00 }
Clipper No. 10, Bronzed Blade, Boxed and Sharpened.....₱ doz $8.50 } 30
Clipper No. 5, Painted Red, Boxed and Sharpened.....₱ doz $8.00

Saws.—Disston's Hand, Panel and Rip.....dis 20 %
Disston's Circular.....dis 40 %
Cross-Cut No. 2, Plain Tooth.....dis 40%
" Patent Tooth.....dis 40%
" Champion Tooth.....dis 40%
Boynton's Lightning Cross Cut, new list.....dis 40 %
" Lightning Buck Saws, cross bar...dis 40 %

Shovels and Spades.
Oliver Ames & Sons, new list.....dis 15 %
Griffiths.....dis 50@50&5
Rowland.....dis 50@50&5

Sad Irons.—4 to 10 lbs.....₱ ℔ 3½c
Mrs. Potts' Patent.....dis 35 %

Stone.
Washita Extra.....₱ ℔ 23½c
" No. 1.....18c
" No. 2.....16c
" Slips.....37c
" Axe.....130 net
Hindostan Oil Stone No. 1.....₱ ℔ 6c } dis 33⅓ %
" Axe Stone.....8c }
" Slips.....100 }

Screws.
Flat Head Iron, new list Dec. 27.....dis 65 %
Flat Head Brass, new list Dec. 27.....dis 65 %
Round Head Brass, new list Dec. 27.....dis. 40 & 10 %
Round Head Iron, new list Dec. 27.....dis. 45 & 10 %

Spoons.
Plated.....dis 40&10&5 %
German Silver.....dis 30&10&5 %
Britannia, Boardman's.....dis 60&10 %
" Parker's.....dis 60&10 %

Tinned.....dis 10 %

Springs.—Torrey.....dis 40 %
Gem No. 3 small Jap'd.....$2.00 } dis 50 & 10 %
" No. 2 medium Jap'd.....2.75 }
Coil No. 70. per gross net.....$6.00
Other Standard Springs.....dis 50&10 %
Warner Door Springs, per doz. net.....1.75
Standard Spring Hinges—
Single No. 0, per doz. net.....1.25
" No. 1. " " 1.50
Other Standard Spring Hinges.....dis 25&10 %

Stocks and Dies......dis 10&5 %

Stove Pollish.—Gem.....₱ gross, $4.50, dis 5 %
Dixon....." 6.00, dis 10%
Fire Fly.....$3.00 gross net

Tacks......dis 30&10 %
Shoe Nails—4-8, and over 8c.....} 10 %
" " 3½-8, and under 9c.....}
Double Pointed Tacks.....dis 40&5 %

Traps.
Genuine Oneida—Newhouse.....dis 35 %
Im. Oneida—Newhouse list, first qual.dis 55&5 @ 60 %

Vises.—Solid Box Trenton new list.....dis 45 %

Wrenches.—Agricultural.....dis 70 %
Coes' Genuine.....dis. 50&10&3 %
Coes' Mechanics'.....dis. 50&10&3 %
" " Mall. Bar.....dis 75 %

Wire.
Bright or Ann'd, No. 0 to 18.....dis 57½@60 %
" No 19 to 26.....dis 60@65 %
" No. 27 to 36.....dis 62½@70 %
Coppered, 0 to 18.....dis 50@50½ %
Tinned Broom Wire.....dis 57½@60 %
Galvanized Barb Wire.....7½c
Painted Barb Wire.....6½c
Galvanized No. 7 to 18....Market List, dis 45@47½ %

Wringers.
Peerless No. 3½.....$42.00
" No. 2.....45.00
Universal No. 2½.....42.00
" No. 2.....45.00
Novelty No. 2, for common tubs.....42 00
" No. 3, " " 48.00
Excelsior E, for stationary tubs.....51.00
" F " " 57 00

In lots of 1 doz. $3.00 doz. dis. from above price.

PITTSBURGH.

Merchant Iron.

TERMS.—Note or acceptance at 60 days, with current rate of exchange on New York, or a discount of 2 per cent. for cash, if remitted within 10 days from date of invoice.

For fluctuations and discounts on card rates see weekly Pittsburgh Trade Report.

The following are card rates.

Flat Bar.

1¼ to 4 by ⅛ to 1 inch.....2.50
4¼ to 6 by ⅛ to 1 " 2.60
1¾ to 6 by 1¼ to 1½ " 2.90
1¼ and 1½ by ⅜ to ¾ " 2.60
1 and 1⅛ by ⅜ to ¾ " 2.70
⅝, ¾ and ⅞ by ⅜ to ⅝ inch.....2.90

Rounds and Squares.

1 to 1⅞.....2.50 | ⅝ to 9-16.....2.70
2 to 2⅝.....2.70 | ½ to 7-16.....2.90
2¾ to 3¾.....3.00 | ⅜.....3.10
3⅝ to 4.....3.50 | 5-16.....3.30
4¼ to 5.....4.00 | ¼.....3.50
¾ to ⅞.....2.80 | 3-16.....5.50

Oval Iron.

⅞ to 1⅛.....2.90 | ⅜.....3.30
⅝ to ¾.....3.10 | ⅜.....3.70

Half Oval and Half Round.

⅞ to 1¼ inch.....3.20 | ⅛ inch.....4.00
⅝ to ¾ " .....3.70 | ⅜ " 5.50

Horse Shoe.

⅜ to 1¼ by 5-16 to ⅞ inch.....3.50

Wagon Box Iron.

¼ Inch, Nos. 13 and 14.....3.70
⅞ " " 11 and 12.....3.50
⅞ " " 13 and 14.....4.00
⅝ " " 11 and 12.....3.80
⅝ " " 13 and 14.....4.10
⅝ " " 11 and 12.....4.10

Heavy Bands.

1¼ to 6 by ¼ and 5-16 inch.....2.70
1⅛ to 3¼ by ¼ and 5-16 " 2.70
1 to 1¾ by ¼ and 5-16 " 2.80
¾ to ⅞ by ¼ and 5-16 " 3.00
⅝ and ⅜ by ¼ and 5-16 " 3.40

Light Bands.

1¼ to 6 by ⅛ to 3-16.....3.00
1¼ to 6 by Nos. 11 and 12.....3 10
1 to 1¾ by ⅛ to 3-16.....3.10
1 to 1¾ by Nos. 11 and 12.....3.20
⅛ and 13-16 by ⅛ to 3-16.....3.40
⅛ and 13-16 by Nos. 11 and 12.....3.50
⅝ and 11-16 by ⅛ to 3-16.....3.70
⅝ and 11-16 by Nos. 11 and 12.....3.80
⅝ and 9-16 by ⅛ to 3-16.....4.00
⅝ and 9-16 by Nos. 11and 12.....4.10
½ inch by ⅛ and 3-16.....4.30
½ inch by Nos 11 and 12.....4.40

Hoop Iron.

1¼ to 4, Nos. 13, 14 and 15.....3.30
1¼ to 2, Nos. 16, 17 and 18.....3.40
1¼ to2, No. 19.....3.50
1¼ to 2, No. 20.....3.60
1¼ to 2, No. 21.....3.70
1¼ to 2, No. 22.....3.80
15-16 1, and 1¼, Nos. 13, 14 and 15.....3.50
15-16. 1. and 1¼, Nos. 16, 17 and 18.....3.60
15-16. 1. and 1¼, Nos. 19 and 20.....3.70
15-16. 1, and 1¼, No. 21.....3.80
15-16. 1, and 1¼, No. 22.....3.90
⅞, Nos. 13, 14 and 15.....3.70
⅞, Nos. 16, 17 and 18.....3.80
⅞, Nos. 19 and 20.....3.90
⅞, No. 21.....4.00
⅞, No. 22.....4.10
13-16 Nos. 13, 14 and 15.....3.90
13-16, Nos. 16, 17 and 18.....4.00
13-16, Nos. 19 and 20.....4.10
13-16, No. 21.....4.20
13-16, No. 22.....4.30
¾, Nos. 13, 14 and 15.....4.00
¾, Nos. 16, 17 and 18.....4.10
¾, Nos. 19 and 20.....4.20
¾, No. 21.....4.30
¾, No. 22.....4.40
11-16, Nos. 13, 14 and 15.....4.20
11-16, Nos. 16, 17 and 18.....4.30
11-16, Nos. 19 and 20.....4.40
11-16, No. 21.....4.50
11-16, No. 22.....4.60
⅝, Nos. 13, 14 and 15.....4.40
⅝, Nos. 16, 17 and 18.....4.50
⅝, Nos. 19 and 20.....4.60
⅝, No. 21.....
⅝, No. 22.....4.70
⅝, No. 23.....4.90
9-16. Nos. 13.14 and 15.....4.50
9-16, Nos. 16, 17 and 18.....4.70
9-16, Nos. 19 and 20.....4.80
9-16, No. 21.....4.90
9 16, No. 22.....5.00
9-16, No. 23.....5.10
⅛ inch, Nos. 13, 14 and 15.....4.80
⅛ " Nos. 16, 17 and 18.....4.90
⅛ " Nos. 19 and 20.....5.10
⅛ " No. 21.....5.30
⅛ " No. 22.....5.40
⅛ " No. 23.....5.40

The prices under Hoop Iron do not apply to Cotton Ties.

1-10c per lb. extra will be charged for each gauge lighter than the lightest indicated.

1-10c per lb. extra will be charged for cutting Hoops to specified lengths.

Barrel Hoops.

1¼ to 2 in., cut to length.

9 to 11 lbs. per set of 6 hoops.....3.50
8 lbs. and less than 9 lbs. per set of 6 hoops.....3.60
Less than 8 lbs. per set of 6 hoops.....3.80

Extras for Cutting to Length all Preceding Iron.

All Iron, including Tire.....1.100

Tank Iron.

No. 9 and heavier.....3.30
Plow Slabs.....3.50
" Wings.....3.80

Sheet Iron.

	Common.	Charcoal.	Juniata.
No. 10 to 14	3.50	4.00	4.50
No. 15 to 17	3.80	4.30	4.80
No. 18 to 21	4.10	4.60	5.10
No. 22 to 24	4.30	4.80	5.30
No. 25 & 26	4.40	4.90	5.40
No. 27	4.70	5.20	5.70
No. 28	4.10	4.60	5.10

All sheets No. 18 and lighter, over 30 inches wide, not less than 2.10c extra.

Wood's Patent Planished Sheet.

1st quality (A).....10½c | 2d quality (B).....9 c

Galvanized C. H. B.—(Charcoal Hammered Blooms.

Nos. 14 to 20	12c	No. 27	15c
Nos. 21 to 24	13c	No. 28	16c
Nos. 25 and 26	14c	No. 29	18c

45 @ 47½ % discount.

Coal Screen Iron.

1¾ by ⅝ by 5-16.....3.00 | 1 by ⅝ by 5-16.....3.50

Angle Iron.

2½, 3, 3½ and 4 inch.....3.30
2½, 1⅝ 2 and 2¼ inch.....3.50
1¼ inch.....3.40
1½ " 3.50
1 " 3.60
1⅛ by 1 inch, for Plow Handles.....3.80
1¼ by ⅝ " " " 3.80
1⅜ by ¼ " " " 3.90

T Rail.

8 lbs. to the yard.....3.00 | 20 lbs. to the yard.....2.80
12 " " .....2.80 | 28 " 2.80
16 " " .....2.80 | 30 " 2.80

Splice Joints for 12, 16 and 20-lb. Rail, 400 each: 28 and 30 lb. Rail, 500 each: 40 lb., 600 each.

2½ by ⅝ and ½ Spikes for 20 and 28-lb. Rail.....3½c
2½ and 3 by ⅝ " " 12 and 16-lb. " 4c
2½ by 5-16 " " 8-lb. Rail.....4½c

Flat Rails.—Punched and Countersunk.

1¼ to 2 by ⅛ to ⅝ inch.....3.00
1¼ by ⅜ and 7-16 inch.....3.20
1¼ by ⅜, 7-16 and ½ inch.....3.50

Juniata Nail Rods.....6.60
Norway " 8.00
Guard Iron, ⅛x⅝, ¼x⅝ and ⅜x⅝.....4.00
" ⅛x⅞, ¼x⅞ and ⅜x⅞.....4.20
Drag Bars.....3.50
Dropper Bars.....3.80
Cylinder and Landside Iron.....3.30
Plow Beam Iron.....4.00

Nails.

See Pittsburgh Trade Report.

Best Quality Refined Cast Steel.

Square, Flat, Octagon and Round.

⅛ to 2 inches, inclusive.....10½c
1-16 and 2⅛ to 3 inches.....11½c
¾ and 3⅛ to 4 " 12½c
7-32 and 4⅛ to 5 " 13½c
9-16 and 5⅛ to 6 " 16c
5-32 inch.....21c
⅛ inch.....40c
Oil Well Steel Forgings.....30c

Machinery Steel.

	Crucible.	Bessemer & Open Hearth
Ordinary Sizes, ⅛ to 2 inch		
Round	6c	5c
5-16 and 2⅛ to 3 inches	7c	5c
¾ and 3⅛ to 6 "	8c	7c
7-32 inch	10c	8c
3-16 "	12c	10c

Square, Flat and Octagon, ½c extra throughout the list.

Cut to specified lengths, ½c extra.

Hammer Cast Steel.

Crucible Cast Steel.....7c
Open Hearth Cast Steel.....6c

Sheet Steel.—Crucible.

	Best.	2d Qual.	3d Quai.	Bessemer & Open Hearth.
To 21 gauge.	12c	11c	9c	7c

1c. extra for each additional gauge.

Cut to multiples or specified lengths, ½c. extra.

Miscellaneous Cast Steel.

Auger and Auger Bit.....7c
Axle Steel for carriages and wagons.....7c
Frog Points and Plates.....7c
" Side Bars.....6c
Pick, plain (hammered).....8c
" and Mattock, beveled (rolled).....7c
Skate Steel.....7c
Table Cutlery, plain.....9c
Table Cutlery, beveled.....9½c
Pike and Cant Hook.....8c
Coal and Granite Wedge.....8c
Roller.....8c
Spindle, subject to Machinery classification.....8c
Trap Spring Steel.....9c
Forged Crank Pins and Lathe Spindles.....9c
Piston Rods, plain.....7c
" forged to shapes.....9c
Slide Bars, plain.....8c
" forged to shapes.....9c

Crucible, Open Hearth or Bessemer.

Boiler, Fire-Box and Flue Sheets, not less than 3-16 thick.....6c
Boiler, Fire-Box and Flue Sheets, not less than ¼ thick.....7c
Circulars and semi-circulars, when ordered separately.....8c
Smoke Stack, to shape.....7c
Locomotive Tank Steel.....6c

File Cast Steel.

Square, Round, Half Round and Flat Bastard, 8-inch and over.....8c
Mill Saw, 8-inch and over.....8½c
Taper, 3½-inch and over.....9½c
Horse and Shoe Rasp.....8½c

Spring Cast Steel.

Spira Taper, cut to lengths.....6½c

Tire Cast Steel.

1X¼ and over.....8½c
1X3-16, ⅞X3-16 and ¼.....9c
1 and 1⅛-16X¼ and 5-32, ¾X3-16 and 5-32.....9½c
⅝ and ⅞X¼ and 3-32 and 12 g.....10c
Solid Safe Cast Steel.....7½c
Three and Five Ply Cast Steel.....10c

Agricultural Implement Cast Steel.

Fork and Rake, Crucible.....6c
Horse Rake Steel, cut to lengths, Crucible.....7c
Hoe, Crucible.....6c
Corn Stalk Cutter, beveled.....7½c
Beveled Hoe and Shovel Steel in Bars.....7c
Crucible Plow Steel in slabs.....6c

Bessemer and Open Hearth.

Spring.....4½c
" spiral and taper, cut to lengths.....5½c
Tire, 2 -16 thick and above.....4½c
Toe Calk.....4½c
Plow.....4½c
Axle Billets.....4c
Sleigh Shoe.....4c
Cutter Shoe, cut to lengths and tapered.....5½c
Scythe Back Steel.....4c
Grain Drill Bars.....6c
" Points.....7c
Rolling Coulter Blanks, cut and punched.....9½c
Thrasher Steel.....4½c
" Teeth.....5½c
Rolled Hammer Billets.....4½c

Terms.—Four months: 2 per cent. discount for cash, if remitted within 30 days.

Rolls and Castings.

Furnace Floor and Straightening Plates.....1½c
Housings and Castings not otherwise specified.....2½c
Guide Plates.....3½c
Spindles and coupling boxes.....2½c
Sand Rolls and Pinions, large size.....3 c
" small size.....3½c
Pipe Mill Castings.....3 c
Rolling Mill Castings under 50 lbs.....4 c
Spur and Bevel Wheels, large.....3 c
" small.....4½c
Pulleys up to 30 inches.....4½c
" over 30 inches.....4½c
Engine Castings, light.....4½c
" " heavy.....4 c

Chilled Rolls.

6 to 10 in. diam., to 20 in. long.....4½c
8 to 15 in. " 8 to 40 in. " 4½c
25 to 24 in. " 15 to 72 in. " 4c
14 to 31 in. " 72 to 108 in. " 4c

After Oct. 1, 1881, no discounts will be made at settlement as heretofore, prices quoted being net.

White and Red Lead.

Strictly Pure White Lead in Oil, in kegs, 6½c.; in 25 ℔ Tin Pails, ½c. ₱ ℔ over keg price; 12½ ℔ Tin Pails, 1c ₱ ℔ over keg price; assorted, 1 to 5 ℔ cans, 3c. per ℔ over keg price.

Dry White Lead in barrels.....6½c
Red Lead, very brilliant, in kegs, 6½c; in barrels 6½c
Litharge (Potter's Lead) " 6½c; 6½c
Freights equalized with all points where White Lead is made.

Terms: Note at sixty days, or if paid within 15 days from date of invoice a discount of 2½ per cent. will be allowed, but not otherwise.

Window Glass.

Discount, 70 % on Single Strength, 70 & 10 % on Double.

Single Strength.

Size.	AA.	A	B.	C.
5 x 8 to 10 x 15	$8.25	$7.50	$7.00	$6.50
11 x 14 to 16 x 24	9.25	8.50	8.00	7.25
18x 22 to 20 x 30	10.75	9.75	8.75	7.75
15 x 36 to 24 x 30	12.25	10.75	9.00	8.00
26 x 28 to 24 x 36	13.00	11.50	9.75	9.00
26 x 36 to 26 x 44	14.50	13.25	10.75	9.50
26 x 46 to 30 x 50	15.00	14.00	11.25	10.50
30 x 52 to 30 x 54	16.00	14 50	12.00	
30 x 56 to 34 x 56	17.25	15.50	13.50	
34 x 58 to 34 x 60	18.25	17.25	15.00	
36 x 60 to 40 x 60	20.75	18.75	17.25	
Double Strength.				
6 x 8 to 10 x 15	12.75	11.75	10.75	10.00
11 x 14 to 16 x 24	14.50	13.25	12.50	11.25
18 x 22 to 20 x 30	17.25	15.75	14.00	
15 x 36 to 24 x 30	19.75	17.25	14.50	
26 x 28 to 24 x 36	21.00	18.50	15.75	
26 x 36 to 20 x 44	23.25	21.25	17.25	
26 x 46 to 30 x 50	24.00	22.50	18.00	
30 x 52 to 30 x 54	26.75	23.25	19.25	
30 x 56 to 34 x 56	27.75	26.00	21.75	
34 x 58 to 34 x 60	29.25	27.75	24.00	
36 x 60 to 40 x 60	33.25	30.00	27.75	

An additional 10 per cent. will be charged for all glass more than 40 inches wide. All sizes above 52 inches in length and not making more than 81 united inches, will be charged in the 84 united inches bracket.

Hubbard, Bakewell & Co.'s Goods.

Axes, Single Bit, Lippincott.....Per doz. $8.00
" " James & Co....." 7.00
" Double Bit, Lippincott....." 15.00
" " James & Co....." 12.00
Drain Tools, list.....dis 20%
Hoes, Planters'.....dis 55%
" Scovill Pattern.....dis 55%
" Handled, Square Eye, German.....dis 25%
Handles, Cross Cut.....Per doz. $3.50
" Shovel, Bent, Bored, Riveted....." 2.50
Saws, Circular.....dis 45%
" Long.....dis 40%
" Cross Cut, H. B. & Co., Champion. Per ft. net.....$0.35
" Cross Cut, Lippincott, Champion. Per ft. net.....30
Shovels, list.....dis 20%
Spades, " .....dis 20%
Scoops, " .....dis 20%

BOSTON.

Reported by Macomber, Bigelow & Dowse.

Anvil & Vise.—
No. 1, $5.25; 2, 4.25; 3, 3.50 each.....dis 25 %
Augurs & Bitts.—Snell's Auger.....dis 40&10 %
L'Hommedieu's Ship Auger.....dis 15 %
Jenning's Bitts.....dis 10&10&10 %
Cook's Bitts.....dis 40&10 %
Shepardson's Double-Cut Bitts.....dis 45 %
Shepardson's Double Gimlets.....dis 40 %
Stearn's Extension Hollow Augers—
No. 2, ₱ doz., $48.00; No. 3, ₱ doz., $60.00 list..dis 20 %
Bonney's Extension Hollow Augers.....₱ doz $36.00
Pierce's Bitts.....dis 50 %
Griswold Bitts.....dis 60 %
Axes.—Blue Jackets.....₱ doz $9.00
Red Cross.....₱ doz 8.00
Red Cross Handled.....₱ doz 12.00
Dowse Handled Boys'.....dis 33⅓ %
Ax Handles.—
Oak Extra, 32 in., No. A.....₱ doz $2.50
Oak Extra, 34 in., No. A.....₱ doz 2.50
Oak Extra, 32 in., No. B.....₱ doz 2.00
Oak Extra, 34 in., No. B.....₱ doz 2.00
Oak Extra, 32 or 34 in., No. C.....₱ doz 1.40
Axle Clips.....dis 50 %
Balances.—Chatillon's.....dis 33⅓ %
Barn Door Rail.—
Cast Angle (for Anti-Friction Hangers).....₱ ft. 20
Cast Half Round.....₱ ft., ⅝, 30; ¾, 40
Wrought Round.....₱ ft., ⅝, 30; ⅞, 40; ¾, 50
Bells.—Connel's Crank Gong, reduced list..dis 15&10 %
Bird Cages.—
Japanned M. B. & D., reduced list, 1879.....dis 40 %
Brass M. B. & D., reduced list 1879.....dis 33⅓ %
Blind Fasts.—Lock Fasts.....₱ C sets $6.00
No. 6 Fasts.....₱ C sets 6.00
Veazie Fasts.....₱ C sets 6.00
Shedd's.....₱ C sets 7.00
Bnd Hinges.—Mall, Hook, 3 holes....₱ C sets 7.00
Brne Awl Handles.—
Phœnix Adjustable.....₱ doz $2.00
Bolts.—Norway Iron Carriage.....dis 75 %
Common Iron Carriage.....dis 80 & 10 %
Borax.—Refined.....₱ lb 15c
Boring Machines.—
Eagle Upright each.....$5.50 list } dis 40&10 %
Eagle Angle each.....6.75 list }
Snell Augers.....₱ set $2.45
Braces.—Barber's.....dis 40&5 %
Spofford's.....dis 10&5 %
Backus'.....dis 50&5 %
Bracket Saws.—Holly Scroll Saw.....each $2.25
Demas Lathe and Scroll Saw.....each 6.50
Bracket Saws, extra quality, to No. 5.....₱ gro 0.75
Steel Frame, with patterns.....₱ doz 6.50
Lester.....dis 20 %
New Rogers, all iron.....dis 25 %
Bracket Saw Blades.—Griffith's pat....₱ gross 75c
Brackets.—
H. B. & M. Flower Pot, reduced list.....dis 15&10 %
Bronzed Shelf, M. B. & D., new list.....dis 50 %
Store Shelf.....dis 40 %
Butts.—Union Fast Joint.....dis 10&10 %
Union Loose Joint.....dis 10&10 %
Union Japanned Acorn.....dis 10&10 %
Union Silvered Acorn.....dis 10&10 %
Union Boston Finish.....dis 70&10 %
Union Spiral Spring.....dis 25&10 %
Wrought Brass.....dis 60&10%
Carriage Bolts.—Eagle Norway.....dis 70&10 %
Common.....dis 80 & 5 %
Carriage Jacks.—Climax No. 1.....₱ doz $27.00
Climax No. 1½.....₱ doz 15.00
Climax No 2.....₱ doz 13.50
Universal.....dis 25 %
Universal No. 1.....each $2.00
Universal No. 2.....each 3.00
Universal No. 3.....each 6.00
Universal No. 4.....each 6.00
Universal No. 4....each 6.50
Cartridges.—U. S. Cartridge Co.....dis 70 %
Cards.—
Watson's make Horse & Curry } dis 10 %
Watson's Cotton } dis 10 % } Rev. List,
Watson's Wool } dis 10 % } Aug., 1883.
Casters.—Bed and Table.....dis 50 %
Chain.—Traces 6½, 10, 4, straight.....₱ pair 90c
Traces 6½, 10, 4, twisted.....₱ pair 55c
Traces 7, 12, 2, twisted.....₱ pair 80c
Coil 3-16.....₱ lb 10½c
Coil ¼.....₱ lb 8½c
Coil 5-16.....₱ lb 7c
Coil ⅜.....₱ lb 6½c
Coil 7-16.....₱ lb 6c
Coil ½.....₱ lb 6½c
Chalk.—White, Carpenter's.....₱ gross 60c
Red, Carpenter's.....₱ gross 80c
Blue, Carpenter's.....₱ gross $1.00
Chisels.—Hart, Bliven & Mead, Framing..dis 60&10&10%
Underhill, Framing.....dis 25 %
Buck's Chisels.....dis 30 %
Clothes Line.—
Galvanized Wire, 100 feet each.....₱ doz $4.00
Coal Hods.—"Dover."—Galvanized, New List.dis 60%
Japanned, new list.....dis 60 %
Cocks.—Brass, L. F. & Co.....dis 50 %
Coffee Mills.—New List.....dis 45 %
Copper Rivets.....dis 50&10 %
Cordage.—Manila, usual trade dis 10.....₱ lb 15½c
Jute.....₱ lb 8c
Cow Ties......dis 33⅓ %
No. 30, 3 ft. No. 6 Wire, with toggle.....₱ doz $3.80
No. 35, 3 ft. No. 6 Wire, with snap.....₱ doz 4.00
No. 40, 3½ feet No. 6 Wire, with toggle.....₱ doz 4.30
No. 45, 3½ ft. No. 6 Wire, with snap.....₱ doz 4.50
No. 50, 4 ft. No. 4 Wire, with toggle.....₱ doz 4.75
No. 55, 4 ft. No. 4 Wire, with snap.....₱ doz 5.00
No. 60, 4½ ft. No. 3 Wire, with toggle.....₱ doz 5.50
No. 65, 4½ ft. No. 3 Wire, with snap.....₱ doz 5.80
Crow Bars.—Cast Steel.....₱ lb 7½c
Iron Steel-pointed.....₱ lb 6c
Cutlery.—Pocket American Shear Co.'s.....dis 40 %
Butcher Knives Wood's, Lap Bolster, Square Handle.....dis 30 %
Steak Knives.....dis 25 %
Lap Bolster, Oval Handle.....dis 20 %
Sticking.....dis 20 %
Skinning.....dis 30 %
Butcher, Common Round Handle, Wood's.....dis 20 %
Shoe Knives, Wood's.....dis 20 %
Dividers.—Cook's.....dis 25 %
Dog Collars......dis 20 %
Door Springs.—Torrey's Rod.....₱ doz $1.62
Imitation Torrey's Rod.....₱ doz 1.44
Gem Coil, new list.....dis 50 & 10 %
Crown.....₱ doz 1.20
Warner's.....₱ doz 2.00
Door Stops.—Thurston's.....dis 50 %
Drawer Knobs.—Thurston's.....dis 50 %
Drills.—Morse Bitt Stock.....dis 25 %
Morse Straight Shank.....dis 20 %
Emery.—Wellington Mills.....₱ lb 10c
Walpole Emery Mills.....₱ lb 6c
Turkish in 10 lb cans.....₱ lb 8c
Enameled Ware.—
Standard Mfg. Co. Kettles.....dis 50 & 10 %
Standard Sauce Pans.....dis 30 %
Felloe Plates.—Wrought.....₱ lb
Files.—American File Co.....dis 45 %
Nicholson File Co.....dis 45 %
Fluting Machines.—Knox list, $4.00.....dis 20 %
American list, $3.40.....dis 20 %
Forks.—W. C. & Co. Manure.....dis 50 %
Gimlet Bits.—
Genuine German, No. 125, 1-32 to 8-32, per doz $1.00
Pierce's.....per doz .80
Glass Cutters.—Combination Glass Cutter and Knife Sharpener.....₱ doz $1.00
Grub Hoes.—E. P. & Co.'s No. 2, $11.50 ₱ doz.dis 50 %
Hammers.—Maydole's.....dis 15 %
Eartford Hammer Co.....dis 20 %
Hangers & Rollers.—Anti-Friction.....dis 50 %
Acme Rollers.....dis 50 %
Climax.....dis 50 %
Common Hangers.....dis 50 %
Common Rollers.....dis 50 %
Hand Screws......dis 10 %
Hatchets.—C. F. Dowse new list.....dis 33⅓ %
Underhill.....dis 30 %
Hay Knives.—Lightning.....₱ doz. $18.00, net
Fisher's Patent.....₱ doz $14.00
Hinges.—Strap and T (new list).....dis 60 %
Providence Plate.....₱ lb 5 c
Wrought Screw Hook.....₱ lb 5 c
Hoes.—W. C. & Co.'s.....dis 50 %
Hooks and Staples.—Brewers' (new list)....dis 60
Horse Nails...... No. 6 7 8 9
National Finished.... .23 .21 .20 .19....dis 20 %
Putnam Pointed..... .24 .22 .21 .20.....5 %
Bridgewater..... .21 .19 .18 .17.....list
Ice Cream Freezers.—Packer's, new list,....dis 50 %
Knobs.—"Norwalk." New list.....dis 50 %
Silver Glass.....dis 50&10 %
Silver Glass Bell Pulls.....dis 50&10 %
Lanterns.—Tubulars, No. 0.....₱ doz 8.00
Lawn Mowers.—The "Daisy."
12 in. cut.....each, $8.00
14 in. cut.....each 8.50
16 in. cut.....each. 9.00
18 in. cut.....each. 9.50
Lead.—Sheet.....₱ lb 7½c
Pipe.....₱ lb 6½c
Locks.—Norwalk.....dis 50 %
Eagle Cabinet.....dis 25 %
Eagle Trunk.....dis 15 %
W. Wilcox & Co., Padlocks.....dis 40 %
Manure Forks.—W. C. & Co.....dis 50 %
Mattocks.—
K. P. & Co., Long Cutter, $16.00 ₱ doz.....dis 50 %
K. P. & Co., Short Cutter, $15.50 ₱ doz.....dis 50 %
K. P. & Co., Pick Cutter, $16.00 ₱ doz.....dis 50 %
Measuring Tapes.—Eddy's.....dis 20 %
Meat Cutters.—Miles' Challenge.....dis 30 %
Hale's, (new list).....dis 40 & 10 %
American.....dis 25 %
Money Drawers.—Tucker's Am.....₱ doz $22.50
Mouse Traps.—Delusion.....₱ doz 1.50
Novelty.....₱ doz
Nails......₱ keg 3.50
Oilers.—Zinc and Tin.....dis 60 %
Brass and Copper.....dis 50 %
Ox Bows.—Extra finished and varnished.....dis 10 %
1¼ in., ₱ doz. pair...$7.00 | 2 in., ₱ doz. pair. $10.00
1½ in., ₱ doz. pair... 9.00 | 2½ in., ₱ doz. pair . 12.00
Paper.—Tarred Sheathing.....₱ lb 2½c
Tarred Eagle Brand.....₱ lb 2½c
Picks.—K. P. & Co., Adze Eye, 4 to 5 lb $12.00...dis 50 %
K. P. & Co., Adze Eye, 6 to 7 lb $13.00.....dis 50 %
Planes.—
Fancy Planes.....dis 15 %
Razee Planes.....dis 20 %
N. Y. Tool Co.....dis 25 %
English Iron.....dis 20 %
Bailey's.....dis 20&10 %
Plated Ware.—Rogers & Bro.....dis 40&5 %
Pliers.—Vom Cleff & Co.'s.....net list
Button's Wire Pliers.....dis 33⅓ %
Plumb & Levels.—Stanley R. & L. Co ...dis 65&10 %
Pocket Knives.—American Shear Co.'s.....dis 40 %
Potato Diggers.—W. C. & Co., reduced list..dis 50 %
Pulleys.—Acme or Excelsior, 1¾ in.....₱ doz 24c
Acme or Excelsior, 2 in.....₱ doz 27c
Pulley Blocks.....dis 35 %
Pumps.—Union Manufacturing Co.
Iron Cistern.....dis 40 %
Iron Pitcher Spout.....dis 50 %
Copper.....dis 30 %
Rivets.—Black (new list).....dis 40 %
Carriage in 10 lb papers (new list).....dis 40 %
Copper.....dis 33⅓ %
Razors.—Torrey's.....dis 20 %
Razor Straps.—Torrey's.....Full line
Rules.—Stanley, Boxwood.....dis 70 &10 %
Stanley, Ivory.....dis 55&10 %
Sad Irons.—Common.....₱ lb 3½c
Laundry.....₱ lb 6½c
Tailors' Geese.....₱ lb 6 c
Enterprise, "Potts".....dis 35 %
Sash Locks.—King & Hutchinson's, new list.dis 40 %
Sandpaper.—Baeder & Adamson.....dis 30 %
M. B. & D.....dis ½ %
Sash Weights.—Patent Eye.....₱ lb 1½c
Saws.—Hand Saws, Disston's.....dis 20 %
Wheeler & Clemson.....dis 20 %
Cross-Cut Saws.
W. M. & Co., Common Tooth, No 1.....₱ foot 35c
W. M. & Co., Champion Tooth.....₱ foot 35c
Disston's, Common Tooth.....₱ foot 66c dis 40 %
Disston's Great American Tooth...₱ foot 68c dis 40 %
Boynton's Lightning Tooth.....₱ foot 45c
M. B. & D., Hand Saws.....dis 33⅓ %
W. M. & Co.'s Circular Saws.....dis 35 %
Richardson Bros.....dis 25 %
Saw Blades.—Disston.....dis 20 %
W. M. & C.....dis 10 %
Welch & Griffith, Extra.....₱ doz $8.40
Welch & Griffith, No. 2.....₱ doz 7.00
Scales.—Fairbanks.....dis 20 %
Screws.
American Flat-Head Iron.....new list, dis 55 & 5 %
American Flat-Head Brass.....new list, dis 55 & 5 %
American Round-Head Brass....new list, dis 45 & 5 %
American Round-Head Iron.....new list, dis 50 & 5 %
Grilley Round Head Nickel-Plated Common..dis 50 %
Scythes.—Clippers, in boxes.....₱ doz $6.75
Shaves.—Kimball's.....₱ inch 7½c
Watrous.....dis 15 %
Shears.—American Shear Co., new list.....dis 70 %
Shot.—Tatham's.....₱ lb 7c
Shovels.—O. Ames, new list.....dis 15 %
O. Ames, other brands, new list.....dis 15 %
M. B. & D.....dis 15 %
Sinks.—Magee Patent.....dis 30 %
Snow Shovels......$4.00
Skates.—Union.....dis 25 %
Acme.....dis 25 %
Imperial Club list No. 5, $3.75 ₱ pair; list No. 7, $5.00 ₱ pair.....dis 25%
Stocks and Dies.—King's.....dis 10&5 %
Tacks.
Swedes Tinned.....dis 30&10 %
Swedes Iron.....dis 30 & 10 %
Gimp and Lace.....dis 20 & 10 %
Copper Tacks.....dis 30 & 10 %
All balances on list.....dis 20&10 %
Traps.—Oneida, Genuine.....dis 33⅓ %
Oneida, Imitation, H. & N.....dis 40 %
Blake's.....dis 40&10 %
Vises.—Simpson's Adjustable.....dis 25&5 %
Howard Vise Co.....dis 25 %
Prentiss'.....dis 20 %
Weather Strips.—Packer's.....₱ doz $4.50
Browne's Flexible Rubber.....dis 30 %
In 25 feet boxes: No. 1, ⅜ in. wide, ₱ yard, 10c.; No. 2, ⅝ in., 15c.; No. 3, ⅞ in., 20c.; No. 4, 1 in.....25c
Black Walnut Spring Weather Strips.....₱ doz $3.50
Window Springs.....dis 33⅓ %
Babcock's No. 3.....₱ gross $0.24
Babcock's No. 4.....₱ gross 4.15
Wire Cloth.—"Clinton".....₱ ft
Wire Fence.—Scutt's Patent, Painted.....₱ lb 6½ c
Scutt's Patent, Galvanized.....₱ lb 7½c
Wire Goods.—Gate Hooks and Eyes, &c., dis 70&10 %
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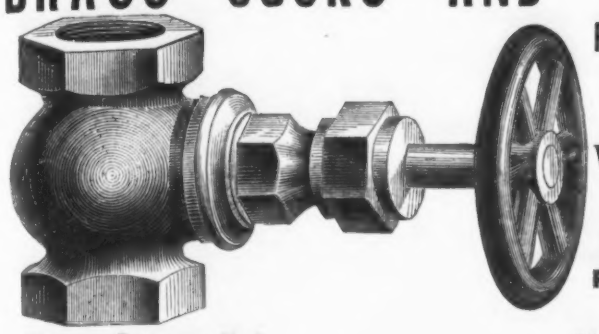

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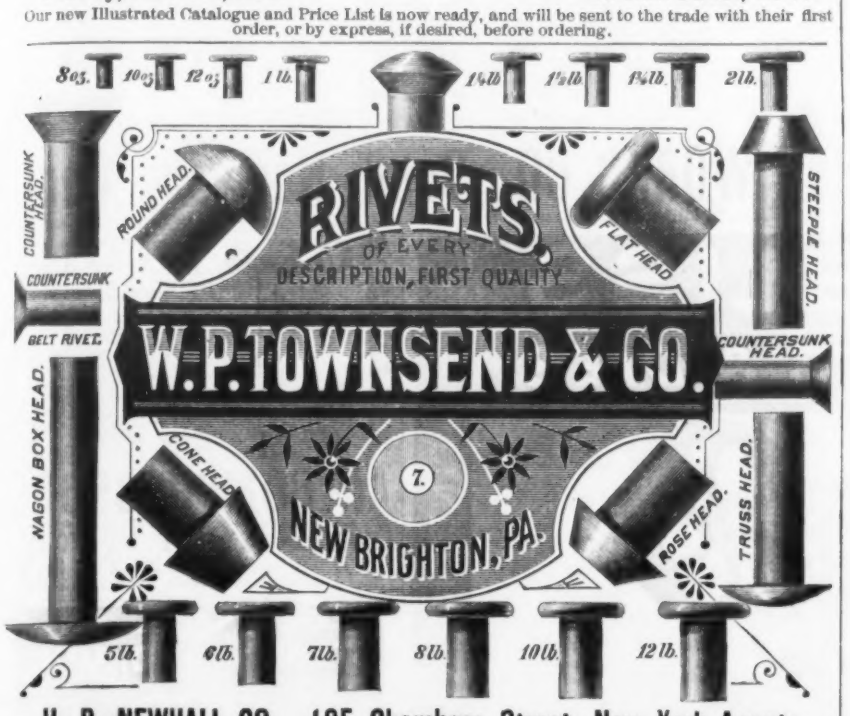

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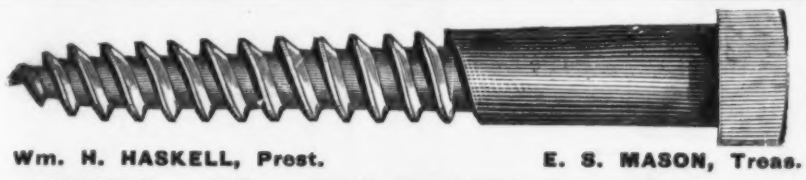

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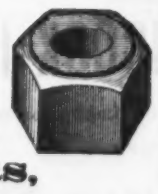

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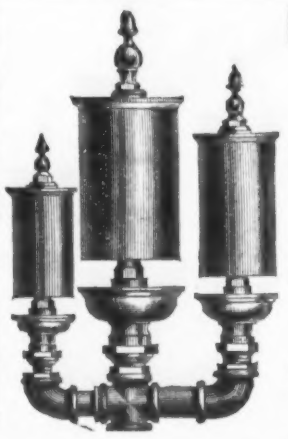

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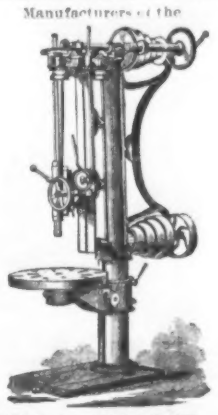

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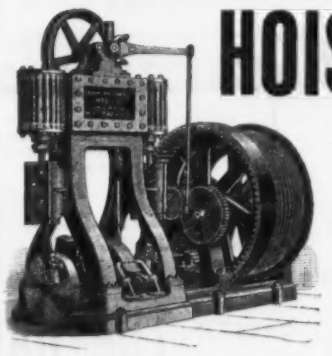

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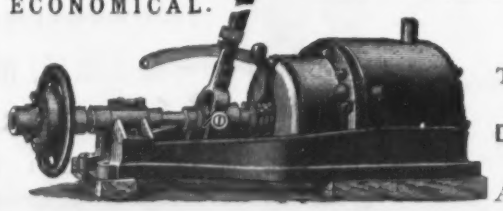

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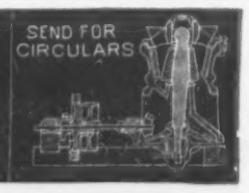

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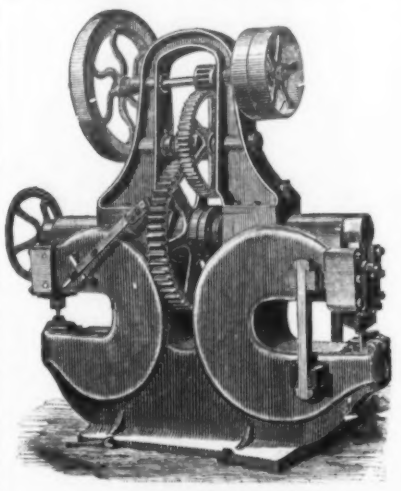

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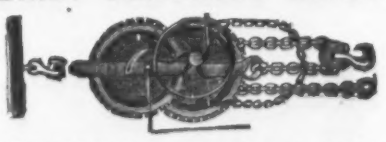

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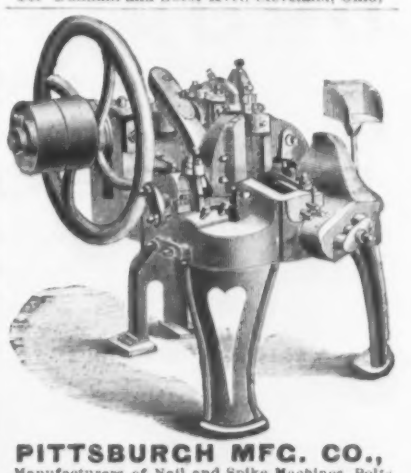

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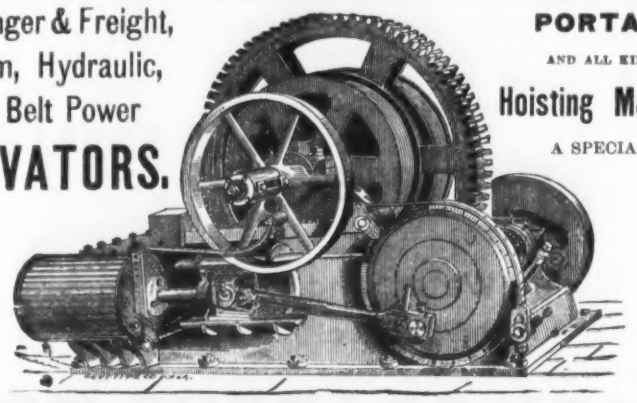

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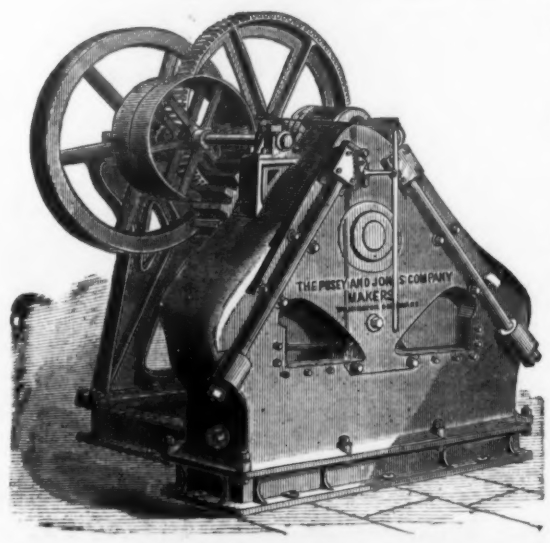

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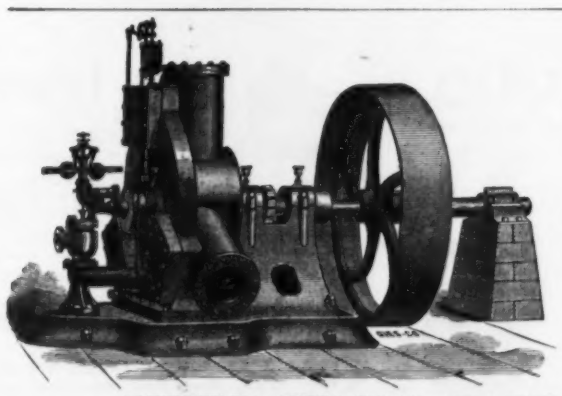

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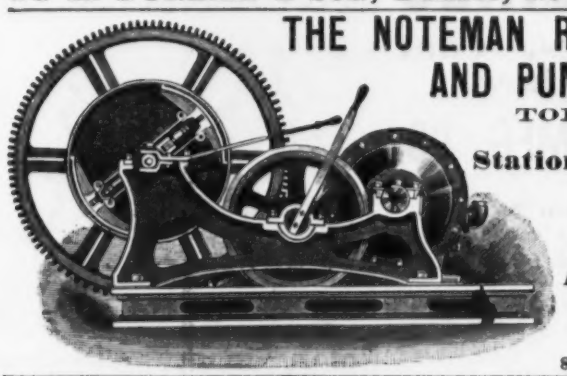

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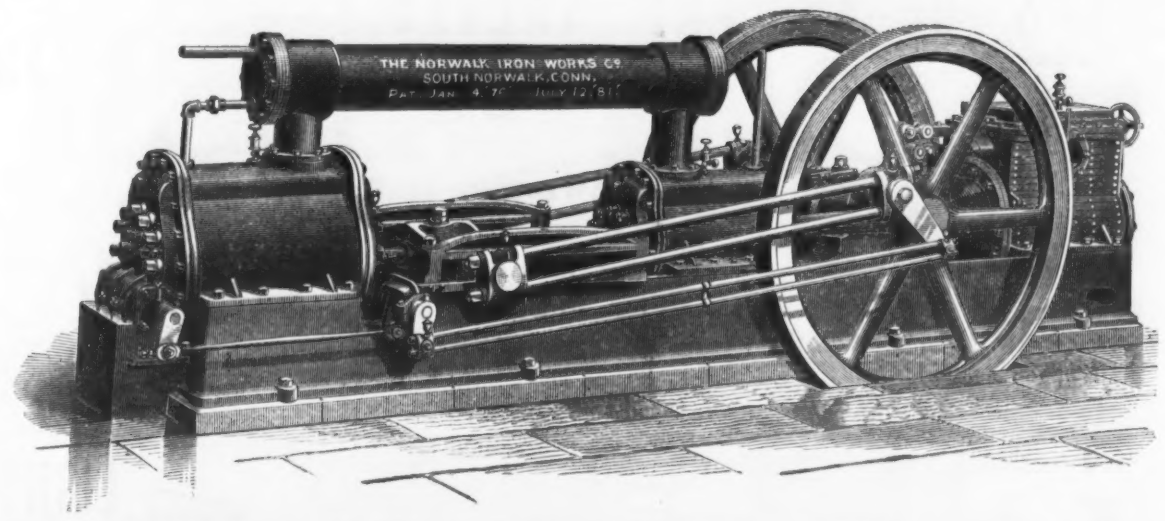

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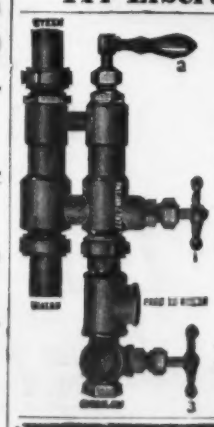

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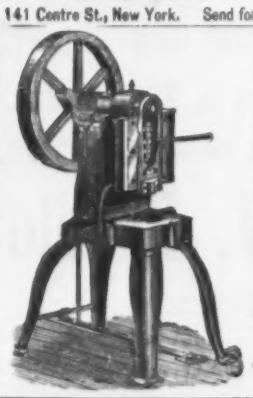

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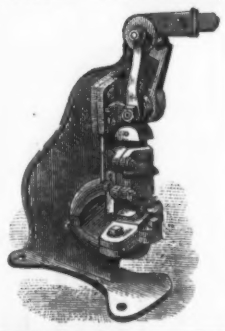

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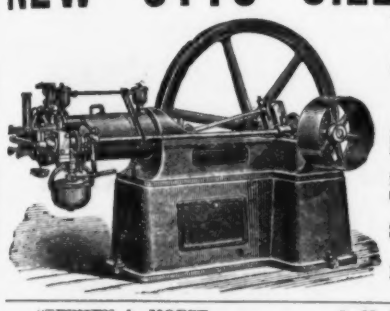

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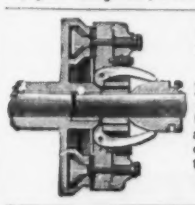

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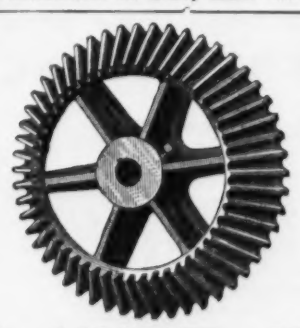

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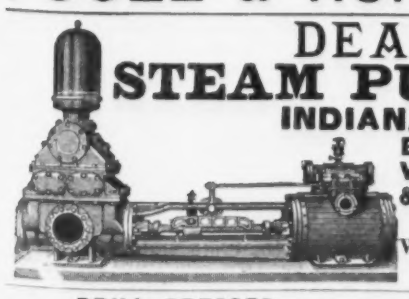

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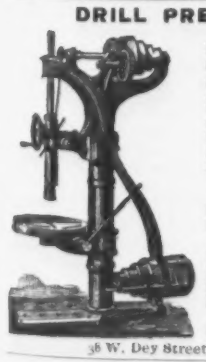

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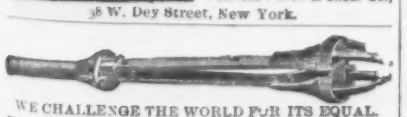

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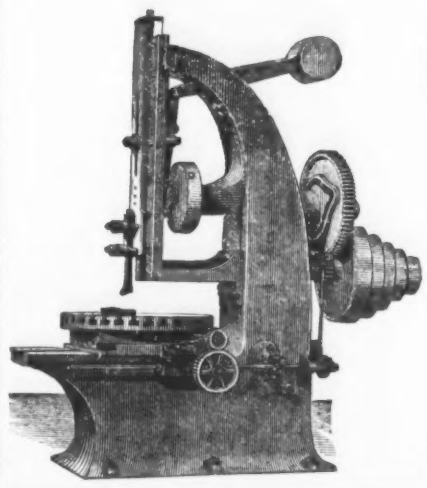

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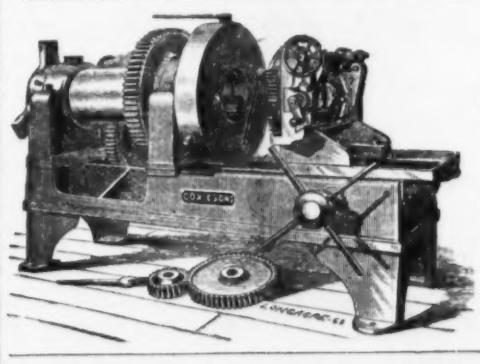

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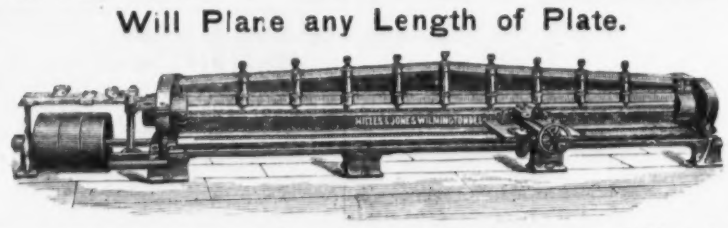

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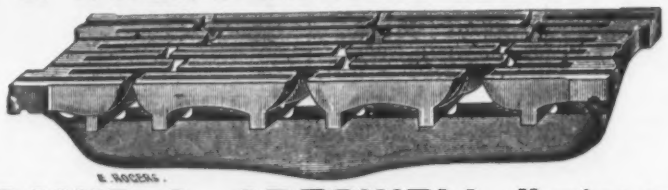

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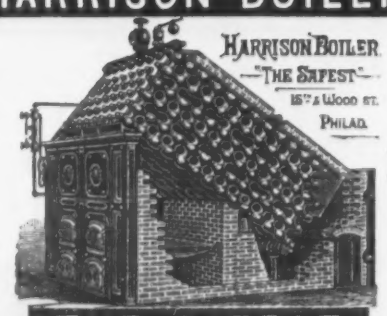

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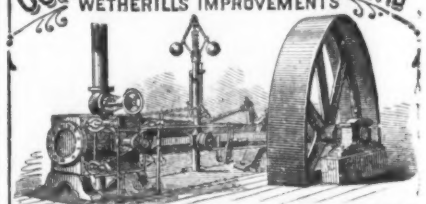

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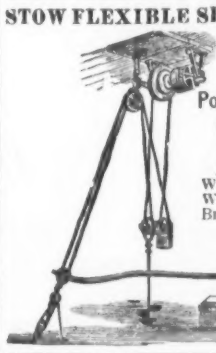

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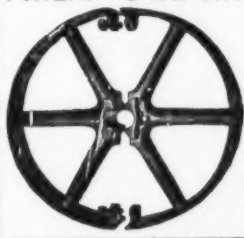

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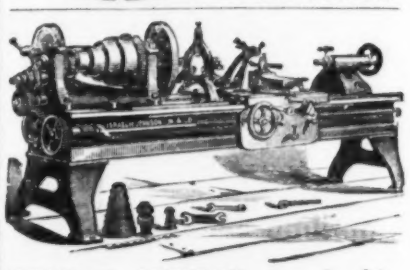

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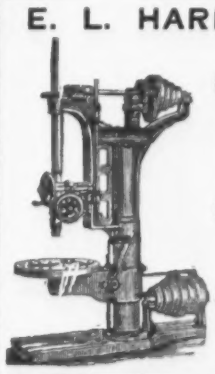

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